TECHNOLOGY DEPT.

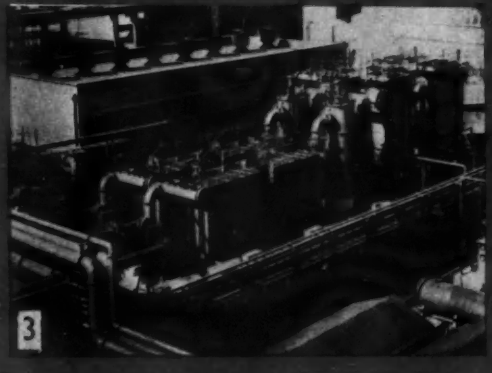
# Gas Journal

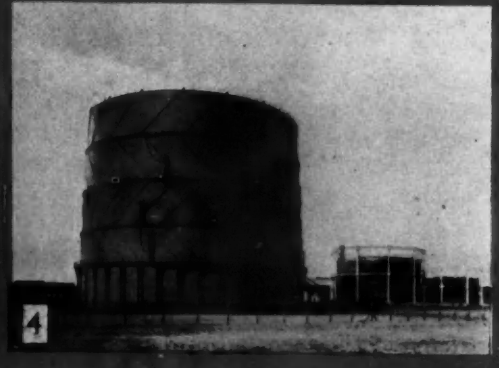
VOL. 292. 109th YEAR. LONDON, OCTOBER 30, 1957 No. 4920 PRICE 1/6

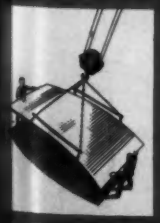
WHESSOE

some recent

installations







1: Benzole scrubbers built for Woodall-Duckham Construction Co. Ltd. for The National Coal Board at Chesterfield.

2: Gas Drying Plant built at Bromley for North Thames Gas Board.

3: Two complete purification streams supplied to Woodall-Duckham Construction Co. Ltd. for East Midlands Gas Board at Rotherham.

4: 3 million cubic feet capacity welded gasholder at Bishop Auckland for Northern Gas Board.

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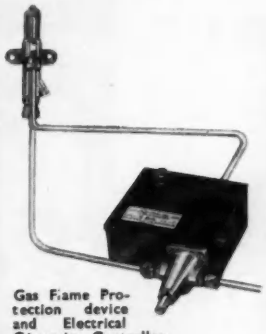

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CAT. NO : G.810
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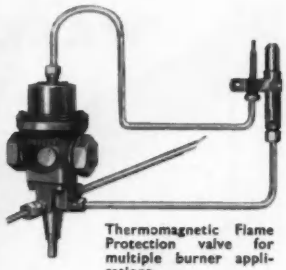

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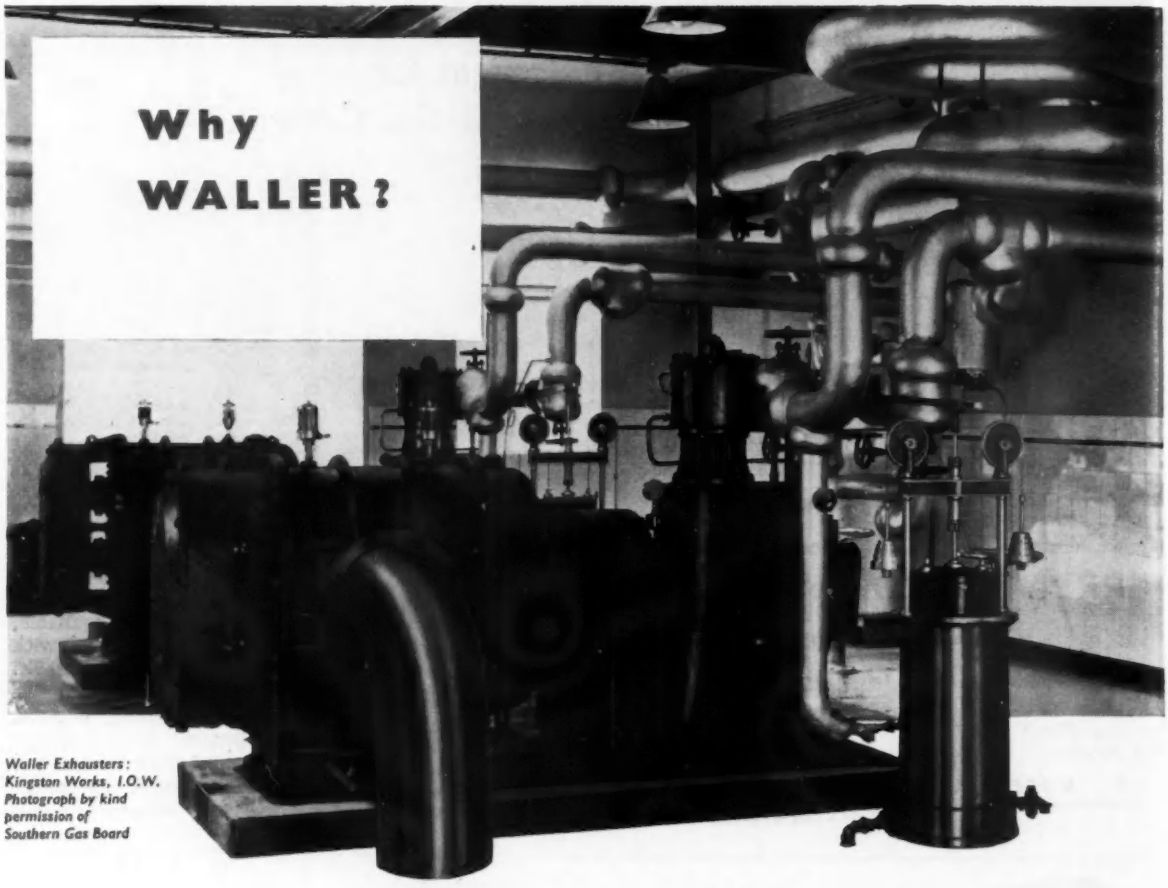


*Waller Exhausters: Kingston Works, I.O.W. Photograph by kind permission of Southern Gas Board*

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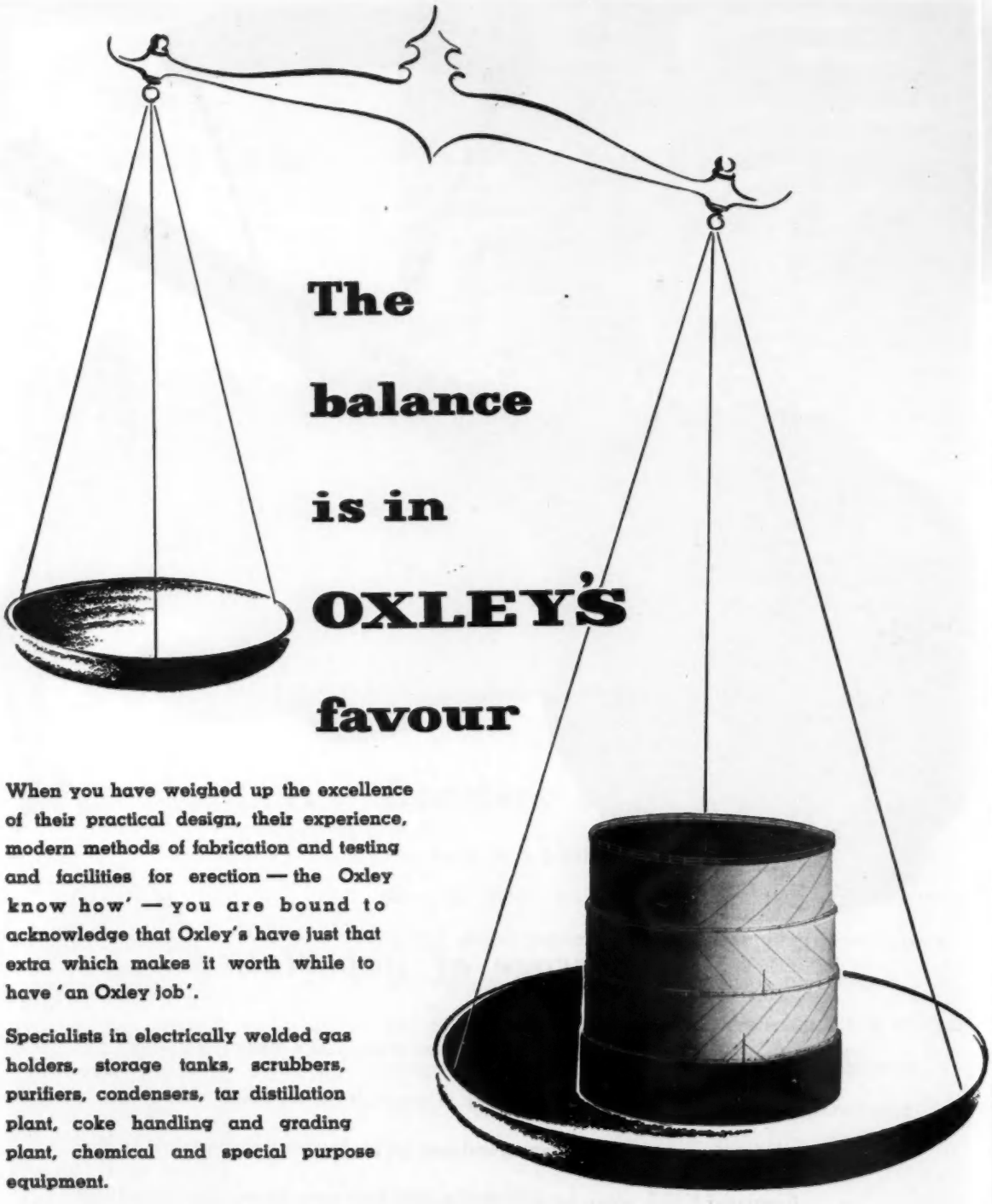

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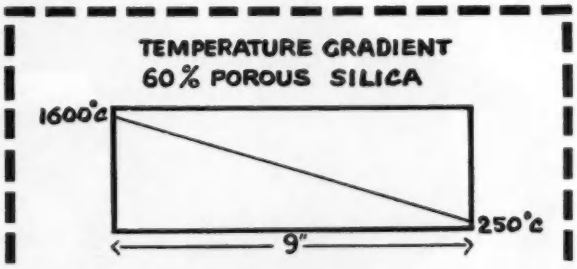


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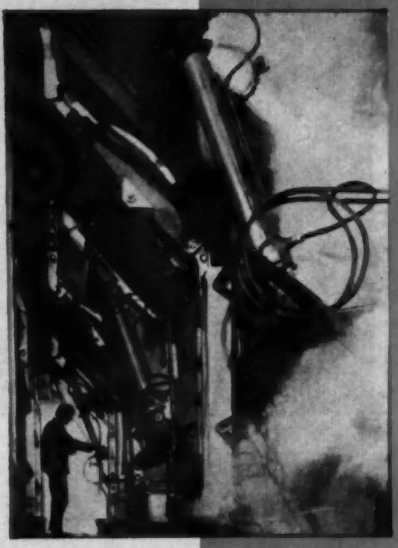

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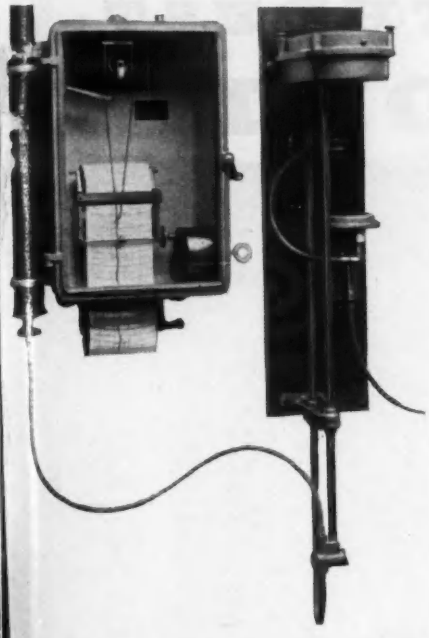

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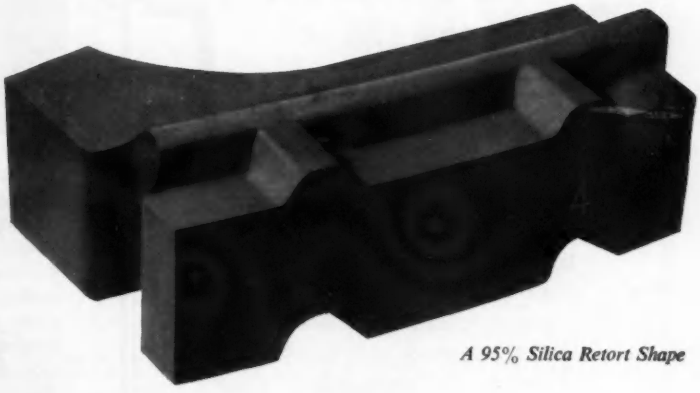

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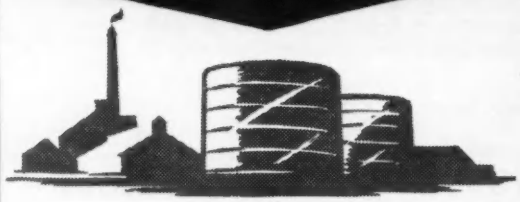

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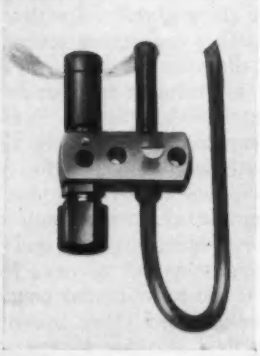

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# Gas Journal

*VOL. 292* *NO. 4920* *October 30, 1957*

109TH YEAR

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Published by Walter King Limited,
11, Bolt Court, Fleet St., London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams: Gasking, Fleet.

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GAS METERS

# Gas Journal

VOLUME 292. No. 4920. OCTOBER 30, 1957. 109th YEAR

## *The Secret of Southport*

THE North Western Gas Board relies on a staff conference to help set forth its policy. In fact, its first conference at Southport in the autumn of 1950 was a most useful way of clearing up a great many doubts in the minds of many of the junior staff and others at the more isolated stations as to how the Board's new organisation affected each and everyone. But this Board has gone further, and has made it possible for its manual workers to be represented through the Joint Consultative Councils, and the first of these conferences was held at Southport in the spring of 1954. At the time there were many who said a conference catering for delegates drawn from such a wide range of employees was bound to fail and that only harm would come out of it. This particular conference proved itself to be not only possible but completely successful. Encouraged by this the Board held a second similarly constituted conference in the spring of last year at Blackpool and a third this month at Southport.

The established pattern of all these conferences includes two periods devoted to questions and answers. First are taken questions previously submitted to the Board for which answers are prepared by the appropriate headquarters' officer, and then spontaneous questions from the body of the hall. It goes far to show how successful Joint Consultation has been in the North West, when the quality and interest of both types of question are considered. The Works Consultative Councils will carefully study the papers to be read at the conference, discuss any points of interest that may occur to its members, and carefully frame a suitable question. Presumably the members of these Councils are elected for their integrity, shrewdness of judgment and sense of fair play, so it is not surprising how well thought out many of the questions are. There will always be some more frivolous questions, and it is possible that some may want to air their grievances. Such questions are, however, remarkably few, and are very seldom heard even in the spontaneous questions which have not been submitted to the Board for consideration, for the Board might be tempted to suppress any really controversial subjects which would cause embarrassment to the senior management. Needless to say, the unsponsored question may well put considerable strain on the ingenuity and speed of repartee of the headquarters' staff.

In this last conference the theme running through the papers and the questions asked, was how to find the best way of keeping gas competitive with electricity and oil, and as a kind of corollary, the kind of future a young man might have when he enters the industry.

The first paper read at this conference was an attempt to explain how a vast concern like an area board has to be organised on sound lines to make quite certain that the work is being carried out properly, at an economic cost, and that the personal relationships between top management and subordinates at all levels, whether the most junior girl clerk or the latest joined apprentice, are being carefully and continually considered.

In fact what was so carefully brought out by many speakers was that in these days the men behind the machine, those responsible for the proper working of a team of juniors, or the general manager himself, must realise that each has a very definite part to play. The machine is merely doing the hard manual work or the time consuming processes in the office and must be kept in its rightful place, where it belongs, subordinate to its owner or driver.

Another paper made it quite clear that the business of a gas board is to sell its products. Although the best brains in the country may be employed to manufacture and distribute gas by the best possible means, if no real militant sales policy has been worked out or encouragement given to possible consumers by means of tariffs or the availability of up-to-date appliances, the Board cannot prosper. The third paper, by Mr. W. Hodkinson, the Deputy Chairman, dealt with the state of the Board's manufacturing potential and explained how the working efficiency of production stations had increased over the last seven years and how the productivity of each employee had improved. These improvements would greatly assist the selling departments by allowing the offer of a gaseous fuel to be made at competitive prices, but even so, the high price of coal made their task increasingly difficult. The Chairman, Mr. Welman, left no doubt about what could be done and what was being done and he spoke with great enthusiasm about the magnificent effort that

all in the North Western Board had made last year in turning a potential loss of £1 mill. into an actual profit of £750,000. Though new methods of production using cheaper types of coal might be tried out, and the best possible form of organisation and management might be adopted, gas must still be sold. Every effort must be made to recover the domestic market, and at least one speaker put forward the idea that the size of the unit by which gas is sold should be changed to one more nearly comparable with the electrical unit.

The organisation behind the North Western conferences is of a high order, and the personality of the Chairman is always allowed full scope to impress itself upon the delegates. Indeed, a casual visitor who might have strayed in Southport's Floral Hall during the Chairman's address would have been forgiven if he had imagined himself at the final meeting of the candidates before a general election. This is a big point and perhaps it may account for much of the success enjoyed by this Board.

## *Skegness*

WITH the unerring migratory instinct of the swallow, the East Midlands Gas Board flies each year to the empty, out-of-season ghost town of Skegness there to hold its annual conference, an event which in its basic planning has shown virtually no change since its inception. Why should it change, when it follows a pattern tried and proved over the years? Far from breeding contempt, recognition of each familiar feature engenders a solid affection. 'Glasgow belongs to me' sang the late Will Fyffe; Skegness unquestionably belongs to Mr. Gwynne Davies.

There was, however, one change this year. The date had been put back from May to October, a sensible move in that it permitted discussion of the Board's report and accounts. Mr. R. S. Johnson was making only his second appearance at the conference as Chairman of the Board, but even so, the sense of continuity was preserved by the presence at Skegness of Mr. Johnson's predecessor, Mr. Sydney Smith, who must, we feel, have derived as much pleasure from meeting former colleagues as he did interest from seeing how the Board was getting along without him. That it seemed to be getting along very nicely, far from being a reflection on Mr. Smith's ability, might be taken as a compliment in that there appears to have been little deviation from the methods and practices in operation under his command.

In general, Mr. Johnson's address, given on Thursday, was in the nature of a survey of the whole of the Board's work, but it included a stentorian battle cry for the benefit of the salesmen and indeed any employee who could assist in creating a sale. Although gas sales were up on the previous year by nearly 1%, appliance sales in 1956-57 fell a point below the danger line and resulted in the account showing a loss which in size was not far short of the decline in gross sales. This point was among those elaborated in a paper by Mr. G. A. Howard, the Chief Accountant, which did much to show that accountants' hands are as warm as yours, or even ours. It is remarkable how much good is done by allowing accountants to explain their function in the scheme of things and the significance of their work.

The following day it was the turn of the Chief Engineer, Mr. F. G. Pyper, who, being sympathetically disposed towards the non-technical element in his audience, made an extraordinarily simple yet complete survey of modern techniques in gas-making, including the proposed importation of liquid methane. One sentence at the end of his address was significant. 'All the new development work,' he said, 'is towards the production of gas only and this will present a new set of problems to an industry which has been based on two fuels for many years. Has coke a future or should the gas industry base its future on supplying a single fuel?' This is what Mr. Johnson called the 64,000-dollar question and, not surprisingly, it brought Mr. J. B. Leaman, the Coke Officer, to his feet to ask whether anyone could offer him a job! He went on, however, to show that his function was a long way from being declared redundant, and that his product not only made a valuable contribution to the industry's economy but at present prices was still the cheapest fuel if burned in the right appliance. He concluded: 'We are still a two-fuel industry; let us go forward with two-fuel minds.'

A feature of the conference was the impact made by Mr. L. F. Randall, the Commercial Manager, whose skilful plucking of what we might term the inherited Hart-strings of the Board has occasioned some comment. We noted with pleasure that he has completed a survey of the smaller commercial consumers and proposes to devote increased attention to this important but often neglected load. But the most thought-provoking part of his address dealt with the scope of space heating by gas. If each of the 1,135,000 domestic consumers in the area is assumed to use two tons of coal each year, and this is regarded as a low figure, then to replace this coal by gas to give the same heat treatment would require 227 mill. therms a year. This means that there is a *potential* sale of gas three times what it is today, and in Mr. Randall's view one of the most potent weapons in the Board's armoury is its well devised two-part tariff.

The final session of the conference was devoted to work study, which might almost be described as a new religion in industry and in which nobody has a better claim to the label 'hot gospeller' than Mr. R. M. Currie, the Head of the Work Study Department of I.C.I. The gas industry is somewhat backward in investigating the possible advantages of this technique, but there is considerable activity going on in the West Midlands; happily, Mr. W. R. Branson, the Board's Deputy Chairman, was able to join his neighbour's party and testify to some of the benefits obtained.

Thus in a day and a half the preoccupation of the conference ranged over such diverse fields as accountancy, production, sales, and work study—the scene being neatly set by the Chairman, and, finally, tidied up and the curtain rung down by the Deputy Chairman. We feel sure that every one of the 250 delegates had a better understanding of his job and his Board as he left the venue to its peeling posters and bleak hibernation. Equally he will look forward to the next conference. Where will it be held? Skegness, of course.

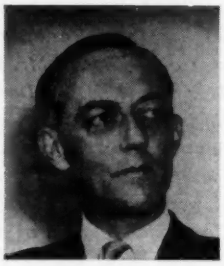
# Personal Notes

MR. F. C. WILSON and MR. D. C. E. POOLE retire from the Board of George Wilson Gas Meters, Ltd., on Friday. They will, however, continue to act as consultants. Mr. Wilson is the sole remaining son of the founder of the business. He was educated in Holland and Berkhamsted School and came to England in 1899 with his brother, the late Chairman, MR. J. H. WILSON, M.B.E., to open a small factory in Coventry in 1903. 'Uncle Fred,' as he is familiarly known, devoted his business life to the sales side of the organisation. He was universally popular and recognised as one of those characters, of whom in these days there are too few. He had many interests and hobbies, not the least being his association with the national savings movement, which he served for over 40 years. He was also a member of the Council of the Coventry Chamber of Commerce and a representative of the Ministry of Labour and National Service Coventry and District Disablement Advisory Committee. Mr. Poole joined the Company in 1911. His ability was such that he quickly became Mr. Wilson's confidant and assistant, and was made a Director of the present Company in 1937. Mr. Poole devoted himself to the interests of the Company and was one of the most outstanding technicians in the gas meter world. His kindly and gentle nature made him many friends who, likewise, appreciated his wisdom and experience. Also retiring on Friday is MR. F. GREENFIELD, Superintendent of the London works. He, too, has been with the Company for more than 40 years. He is to be succeeded by MR. A. NEWGAS, hitherto his deputy. MR. W. COMPTON CARR, Solicitor, has accepted an invitation to join the Board of the Company from the same date.

*Mr. F. C. Wilson.*

*Mr. D. C. E. Poole.*

MR. S. H. BOYNS, Station Engineer at the Brentford works of North Thames Gas Board, has retired. In consequence, Mr. C. P. N. Cox has been appointed Station Engineer, Brentford; Mr. T. Stamper, Deputy Station Engineer, Fulham; and Mr. D. H. Jones, Senior Assistant Engineer, Southall. To mark Mr. Boyns' retirement, a ceremony was held recently at Brentford when MR. C. C. CUNNOLD, Group Engineer, presented him with a chiming clock and a cut-glass fruit set. For Mrs. Boyns, who was also present, there was a bouquet of flowers. This was followed by a further presentation from the works 'young and old' fund, of gardening equipment, made by MR. G. F. ROBERTS, Assistant Engineer.



*Mr. C. P. N. Cox.*

MR. M. V. MURRAY, Superintendent of the boiler department, is leaving the British Coal Utilisation Research Association at the end of November to join the technical department of Wm. Cory & Son, Ltd., Cory Buildings, Fenchurch Street, London, E.C.3. During his ten years at B.C.U.R.A., Mr. Murray has been closely associated with the work on firing appliances and industrial boilers and, latterly, with the work on boiler availability.

MR. JAMES CORDINER, Deputy Controller of the Northern Division of the Scottish Gas Board, has retired after 47 years' service in Aberdeen. He was presented with a gold wrist watch by Mr. H. S. Milne, General Manager, on behalf of the divisional staff.

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# Dr. P. C. L. Thorne

## *APPRECIATION BY MR. J. H. DYDE*

### *Deputy Chairman, Eastern Gas Board; Chairman, Gas Education Committee*

Members of The Institution of Gas Engineers will have heard with regret of the recent death of Dr. P. C. L. Thorne who, as one of H.M. Inspectors of the Board (later Ministry) of Education was, for over 20 years, closely connected with the Institution's education schemes.

After leaving Cambridge University in 1912, Dr. Thorne spent three years on the staff of the Borough Road College, Isleworth, and then went into industry as Chief Works Chemist of the firm of Coley. In 1919 he returned to a teaching career as a lecturer in inorganic chemistry at the Sir John Cass Technical Institute, from where he went to the Woolwich Polytechnic as acting head of the department of chemistry.

Dr. Thorne joined the Board of Education in 1931 and from this time until his retirement, in 1953, he served on the Gas Education Committee and some of the district gas education committees of The Institution of Gas Engineers. He was latterly Senior Staff Inspector of the Ministry of Education in Industrial Chemistry, but throughout his career at the Ministry he took especial interest in the educational activities of the gas industry. He served for many years as a moderator on the Board of Examiners of the Institution and also on its Sales Training Committee. He represented the Ministry of Education on the Gas Council's Advisory Committee on Education and Training and on the advisory committees of the City and Guilds of London Institute in Gas Technology and Gas Fitting.

Dr. Thorne will be particularly remembered by many in the gas industry for the short courses for teachers in gas subjects which he organised and directed for many years before and after the war. He had a particular flair for this kind of work and always managed so to arrange the courses that a short period of intensive study was thoroughly enjoyed by all who attended them.

His wide experience of technological education made him a most useful member of the Ad Hoc Committee which produced the present scheme for the Associate Membership examination of the Institution of Gas Engineers and qualification through the National Certificate machinery.

It may not be generally known in the gas industry that the day-to-day queries that come into the Institution from students concerning their education and training are handled by a small committee comprising the Assistant Secretary, the Chairman of the Gas Education Committee, and the senior H.M. Inspector. For years Dr. Thorne served as the H.M.I. representative on this Committee, and many students have reason to be grateful for the advice he was able to give them in framing their careers.

Dr. Thorne's retirement in 1953 was marked by a presentation to him, at the 90th annual general meeting of the Institution, from those who had been associated with the Institution's education scheme.

Since his retirement Dr. Thorne held a number of part-time appointments, including that of Education Officer of the Institute of Fuel.

He was a kindly and genial man, with a very humane and understanding approach to educational matters. He will long be remembered by the several industries in the educational activities of which he played an important part.

**MRS. R. H. Sandford Smith, wife of the Deputy Chairman of the South Eastern Gas Board, named the m.v. 'Southwark,' the Board's newest and largest collier, which was launched at Sunderland recently. The 4,200 ton single-screw vessel, which was built for the Board by Austin and Pickersgill, of Sunderland, will carry coal from north east ports to the East Greenwich works.**

# South Eastern Board's New Collier

## *Mrs. Sandford Smith Performs Launching Ceremony*

*Among those present at the ceremony, seen below, were Mrs. A. G. Gostelow, wife of the Board's Coal and Shipping Manager; Mr. R. H. Sandford Smith, Deputy Chairman of the Board; Mr. George Young, General Manager, T. R. Dowson and Co. Ltd.; Mr. A. H. W. Dawson, Director and Resident Manager, North-East Marine Engineering Company, Sunderland; Mrs. A. E. Dean, wife of the Board's Marine Superintendent; Mrs. J. C. Flisher, wife of the Chairman of Messrs. Austin and Pickersgill, builders of the ship; Mr. J. W. Walker, Lloyd's Principal Surveyor, Newcastle-on-Tyne; Mrs. R. H. Sandford Smith; Captain S. B. Smith, M.B.E., Commodore Captain of the Board's fleet and Master designate of the 'Southwark'; Mrs. C. Stott, wife of the Board's Deputy Chief Engineer; Mrs. B. C. Hinwood, wife of the Board's Senior Station Engineer; Mrs. J. P. Gilfillan, wife of the manager of the Wear Dockyard of Austin and Pickersgill; Mr. A. G. Gostelow, the Board's Coal and Shipping Manager; Mrs. A. H. W. Dawson.*

# *Diary of Coming Events*

**October 31.**—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, W.C.2, 2.30 p.m. Address by Mr. Stirling Everard, M.B.E., Manager of the Board's Market Research Section—'Smokeless Zones and the Gas Load.'

**November 1.** — SCOTTISH WESTERN JUNIORS: 9, George Square, Glasgow. Ladies' Night, 7.15 p.m.

**November 4.**—SOCIETY OF ENGINEERS: Burlington House, W.1. Paper, 'Hydraulics in Industry,' by R. H. Bound. 5 p.m.

**November 5.**—INSTITUTION OF CHEMICAL ENGINEERS: Burlington House, Piccadilly, W.1. Ninth Hinchley Memorial Lecture, 'An Education for our Times?' by Dr. R. P. Linstead.

**November 5.**—INSTITUTION OF CIVIL ENGINEERS: Presidential Address by Sir Arthur Whitaker. 5.30 p.m.

**November 5.**—SOUTH EASTERN G.C.C.: Caxton Hall, S.W.1. 11 a.m.

**November 5.**—EAST MIDLANDS G.C.C.: Meeting at Nottingham Chamber of Commerce, Smithy Row, Nottingham. 11.30 a.m.

**November 5 and 6.**—COMBUSTION ENGINEERING ASSOCIATION: A study in detail of N.I.F.E.S. third progress survey. Old Swan Hotel, Harrogate.

**November 6.**—MIDLAND JUNIORS: Joint Meeting with WOLVERHAMPTON AND DISTRICT ENGINEERING SOCIETY in Demonstration Room, Gas Offices, Wolverhampton. Paper, 'Development and Use of the Lubricated Taper Plug Valve,' by Mr. F. E. Varlow. 7.30 p.m.

**November 6.** — INCORPORATED PLANT ENGINEERS: Edinburgh: 25 Charlotte Square: 'The Clean Air Act,' T. N. Ashford, A.M.I.Mech.E., F.Inst.F., Scottish Branch, National Smoke Abatement Society. 7 p.m.

**November 6.**—WALES AND MONMOUTHSHIRE JUNIORS, NORTH WALES SECTION: Visit to Factory of R. H. Robinson Ltd., Liverpool.

**November 7.**—I.G.E. (NORTH OF ENGLAND SECTION): Newcastle-upon-Tyne. Paper by Mr. H. Buckley, 'As Others See Us.' 2.30 p.m.

**November 8.**—I.G.E. (MANCHESTER AND DISTRICT SECTION): Queens Hotel, Manchester. Autumn ordinary general meeting, 2 p.m.

**November 9.**—EAST OF SCOTLAND JUNIORS: Perth. Paper by Mr. John H. Ramage, 'The History of Water Treatment.'

**November 12.**—MIDLAND JUNIORS: Paper, 'The Fuel Expenditure Index,' by Mr. B. H. Cunningworth.

**November 12.**—INSTITUTION OF WATER ENGINEERS (MIDLAND SECTION): Paper on Cathodic Protection by J. S. Gerrard.

**November 13.**—INSTITUTE OF FUEL, NORTH-WESTERN SECTION: Engineers' Club, Albert Square, Manchester. 'Space Heating without Smoke.' Papers on gas, oil, electricity and solid fuels, followed by a discussion. One-day, joint conference with NATIONAL SMOKE ABATEMENT SOCIETY, N.W. DIVISION. 10.30 a.m.

**November 13.**—INCORPORATED PLANT ENGINEERS: Western: Grand Hotel, Bristol. 'Some aspects of flue gas corrosion,' P. F. Corbett. 7.15 p.m.

## DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

# NEW STATION AT STEVENAGE

THE Research Council of the Department of Scientific and Industrial Research has decided to replace the present fuel research station at Greenwich, where it would be uneconomic to spend more money on the buildings, by a new research station at Stevenage.

The state of fuel research in Great Britain has changed a great deal since the fuel research station was set up in 1917. At that time there was a need for the fuel research station to cover the whole field of research on solid, liquid and gaseous fuels. Since then, the work of the fuel research station, in opening up the field and in pointing the way for further work, has led to the growth of other organisations for research on fuels. Today, apart from the fuel research station and the activities of both industrial firms and some universities, fuel research in this country is carried out by the National Coal Board, the Central Electricity Authority, the Gas Council, the British Coal Utilisation Research Association, the British Electrical and Allied Industries Research Association, the British Coke Research Association, the Coal Tar Research Association, the Heating and Ventilating Research Council, the Safety in Mines Research Establishment (Ministry of Power), and the National Gas Turbine Establishment (Ministry of Supply). Many of these organisations have already taken over branches of work which, in the past, had been done by the fuel research station. Other research associations work on problems arising from the utilisation of fuel in the industries they serve.

Each item on the present programme of the fuel research station has been considered very carefully to see whether it should be continued at Stevenage or whether it would be better completed at Greenwich or left to some other research organisation. As a result research now being undertaken at the fuel research station to be transferred to Stevenage includes only the study of the synthesis of carbon monoxide and hydrogen to produce oils and chemicals, and work on atmospheric pollution and its prevention.

The new station at Stevenage will also be available to carry out any other investigations in the field of fuel research which the national interest may require and which are not more appropriately carried out by other research organisations.

## MAYOR AND G.C.C. CHAIRMAN

*The Northern Gas Board met in Sunderland recently as a tribute to Alderman Joseph Hoy, this year's Mayor of Sunderland, who has been a member of the Board since its inception. After the meeting Alderman Hoy extended a civic welcome to the Board. Pictured above are, left to right, Mr. E. Crowther, Chairman of the Board; Alderman Hoy, Chairman of the Northern Gas Consultative Council; Mr. J. E. White, Deputy Chairman of the Board; and Lord Adams.*

# GAS MAKES UNWELCOME ENTRY INTO KITCHEN

MR. AND MRS. REGINALD ADDY were evacuated from their home in Wath-on-Dearne, near Mexborough, some weeks ago because methane gas was seeping into their kitchen.

While they were away, the kitchen floor was relaid with tiles which covered three 6-ft.-long bleeder pipes. But when they went home the other day the gas was still there.

The pipes were inserted to enable Coal Board chemists to make tests; each day since the couple went home, whenever Mrs. Addy has held a lighted match to the pipes flames have gushed out.

It was believed originally that the gas was coming from a choked sewer. But this has now been cleaned, and it is thought that it may be coming from a seam of coal near the surface.

According to Mr. W. W. Wilkinson, Public Health Inspector to Wath Urban Council, it will be necessary to wait several weeks to see if it persists.

# Two Northern Ireland Gasworks Improve Trade

## *Hospital Adopts Emergency Gas Lighting and Heating*

THE trading accounts of Coleraine (Co. Londonderry) Borough Council gas undertaking for the year 1956-57 show a net working loss of £811 compared with a loss of £5,519 the previous year.

At the October meeting of the Borough Council a Gas Committee report recommending the acceptance of the accounts was adopted. The report showed that the amount of gas manufactured from August 23 to September 27 was 15,469,900 cu.ft., a decrease of 1,003,100 cu.ft. compared with the corresponding period last year.

The Council confirmed the appointment of Mr. T. R. Cameron as manager of the gas undertaking on completion of his probationary period of one year, and increased his salary by £50 per annum.

Newry (Co. Down) Urban Council Gas Committee has decided to ask the Council for approval for a loan of £1,800 to defray the cost of additional mains to boost gas pressure in a number of streets of the town. More than 600 consumers will be affected as a result.

The financial statement showed that the undertaking had a credit balance of £4,241 compared with an overdraft in September last year of £761. The Manager, Mr. J. Collins, said that despite increased loan charges they would have to continue spending to keep their services up to date and give a satisfactory supply to customers.

The North Down Hospital Management Committee has installed gas emergency heating and lighting in Bangor Hospital, so that provision is now made for any electricity failure in the coming winter.

*Request to Minister*

## *'ONE SHOWROOM FOR ELECTRICITY AND GAS, PLEASE'*

THE purchase by the Scottish Gas Board of premises in Saltcoats, for new showrooms, has sparked off a decision by the local Town Council to ask the Ministry of Power to introduce a scheme to co-ordinate the supply of gas and electricity.

Recently the Electricity Board acquired premises in the town for conversion into showrooms, and at a meeting of the Town Council ex-Provost Reid said these two purchases were a gross overlapping and had incurred heavy expenditure which could have been eliminated.

Treasurer Mulgrew said there should be co-ordination of the industry instead of competition. It was a waste of taxpayers' money for two showrooms to be purchased when one could do for both undertakings.

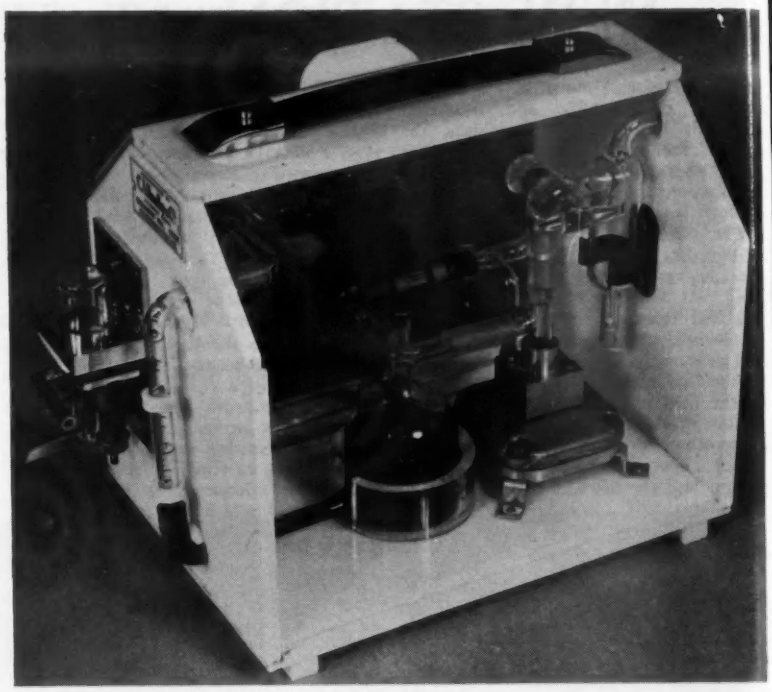
Councillor Kerr said he felt the Council had enough to do 'keeping the town off the rocks' without interfering with nationalised industries, and Councillor Lindsay said the competition between the two Boards had resulted in tremendous improvement.

By the casting vote of Provost Mrs. Lambie it was decided to send the request to the Ministry.

## *Youth in the Kitchen*

The Gas Council is to sponsor a nation-wide cookery competition for young people as a 'repeat performance' of that held in 1954.

## NEW APPARATUS FOR DETERMINING $H_2S$



*Apparatus for the measurement of $H_2S$ rely on the production of a lead sulphide stain on a lead acetate test paper. Gas flow must be constant (usually 0.5 cu.ft. per hr.), and various means of controlling it have been tried; a differential governor with a robust glass valve was described in the 'GAS JOURNAL' of December 19, 1951. Following a prolonged test under works conditions, a complete apparatus was developed, incorporating this governor. It is pictured above as made by C. A. Hendley of Buckhurst Hill, Essex. The gas enters through a moisture trap and glass tap into the top of the governor valve. The outlet of the valve is connected to the inlet of the control capillary, and also to the reservoir of the flow gauge. The gas passes from the capillary to the saturator, and thence to the test paper held in the clamp on the front of the apparatus. A pressure point from the outlet of the capillary tube is connected the other side of the governor diaphragm to provide the differential pressure.*

# Good Attendance at Yorkshire Juniors' Annual Meeting

### *CLAYTON GOLD MEDAL PRESENTED*

MORE than 60 members attended the recent meeting of the Yorkshire Junior Gas Association in Leeds to support their retiring President, Mr. R. H. Anderson; his successor for 1957-58, Mr. E. S. Carter; and the officers.

Mr. R. E. White is now Senior Vice-President and Mr. C. E. Mills, of Sheffield, Junior Vice-President. Mr. I. Marshall continues as Honorary Secretary and Treasurer with Mr. R. T. Mason as his assistant.

Messrs. F. Roberts (Bradford), B. C. Smith (Dewsbury, and A. J. Winter (Leeds), were elected to fill three vacancies on the council; Messrs. J. G. Gaunt (Cleckheaton), R. E. White (Tingley), and E. C. Williams (Doncaster), to the three vacancies as representatives on the Yorkshire District Gas Education Committee; Messrs. J. G. Gaunt and R. E. White to the two vacancies as representatives on the Yorkshire Council for further education.

Mr. F. L. Barker moved a vote of thanks to the retiring President, officers, council members, and representatives.

Mr. R. H. Anderson, deputising for Mr. Hartley of Clayton & Co. Ltd. presented the Clayton Gold Medal to C. H. Rann for his paper on 'Warming of Buildings by High Intensity Radiant Heaters, with some Aspects of Control' with a subsidiary prize to Mr. S. Thackray for his contribution. The Clapham Silver Medal was presented by Mr. W. A. Clapham of Clapham Brothers Ltd., of Keighley to Mr. L. Ward who also received at the hands of Mr. Anderson the Society of British Gas Industries' Silver Medal for his paper on 'Some Aspects of Pressure and Flow Control.' The Firth Prize for a short paper on 'The De-Commissioning of a Gas Holder' went to Mr. J. Shuttleworth.

Mr. J. G. Tilley, Group General Manager, N.E.G.B., Huddersfield-Halifax Group, who is President elect of the Manchester branch of the Institute of Gas Engineers, gave an address on 'Some Aspects of Management.'

Mr. C. E. Mills, of Sheffield, the new Junior Vice-President, moved a vote of thanks to Dr. R. S. Edwards for facilities granted to the Association.

## Less Coal Mined

Increased voluntary absenteeism in the pits following the abolition of penalties is blamed as a major factor contributing to a drop in coal production since the middle of the year. It has been aggravated recently by involuntary absenteeism due to Asian 'flu.

# South Australian Gas Company Sales Rise by 100 mill. cu. ft.

***CONSUMERS UP: APPLIANCE SALES BUOYANT***

GAS sales had increased by more than 100 mill. cu.ft. and consumers by more than 3,500 during the year, Mr. R. M. Steele, C.B.E., stated at the annual general meeting of the South Australian Gas Company. The total number of consumers was 106,184.

Appliance sales were buoyant. The number sold was 21,268, which included 4,855 fires, a very popular appliance.

This expansion arose from the pre-eminent position of gas as a speedy and convenient heating medium and the major part it played in contributing to the more comfortable living standards sought by the rapidly increasing population.

New legislation had already proved of great value in enabling gas to be sold as cheaply as possible and at the same time strengthening the Company's financial structure. Both aims were vital to the interests of gas consumers and also to the share, stock and bondholders.

### Tax Provision Down

It was interesting to record that the income tax provision for the year was £100,000 less than what would have been required if the capital reorganisation had not been made. The total income tax saving for the two years since the reorganisation was effected was £165,000.

Net profit for the year after meeting all charges including interest on stock and bonds and providing for depreciation and income tax was £94,628. Dividend at 6% per annum absorbed £29,294 leaving £65,334 to be added to the profit and loss appropriation account which was now increased to £158,174. This result was considered satisfactory, particularly as unseasonable weather in the second half of the year had had a marked effect on the volume of gas sales.

The depreciation provision stood at £767,056, an increase of £200,225 on the amount standing last year.

# Midland Juniors Opening Meeting

THE opening meeting of the new session of the Midland Junior Gas Association took place recently in Birmingham.

At the outset the chair was occupied by the outgoing President, Mr. J. A. W. Stretton (Wales Gas Board), who offered a hearty welcome to the large attendance of members and formally inducted to office for the coming year, the new President, Mr. D. J. O. Bath, formerly of Oxford but now with the Southern Gas Board at Southampton.

Mr. Bath thanked the outgoing President for the manner in which he had carried out the duties during his year of office, and then gave his Presidential Address.

At the conclusion Mr. R. Thompson, an old colleague of Mr. Bath's, proposed a vote of thanks.

# MORE GAS . . . LESS TV

A gasholder at Bromsgrove is providing a problem for television technicians. During peak periods of gas consumption viewers in houses nearby obtain a reasonable picture. But when the holder is full there is considerable interference.

The West Midlands Gas Board has suggested an aerial attached to the top of the gasholder, which, rising and falling with the holder, would feed the picture it received to the badly affected sets. But a TV technician commented that the cost of the cable and special fittings would be prohibitive.

A solution which has proved successful in several cases is to point individual aerials, not towards the transmitting station, but towards the gasholder.

**Honeywell-Brown Ltd.**

# FOUNDATION STONE OF GIANT NEW H.Q. IS LAID

AT a recent ceremony in Greenford, Middlesex, Mr. E. C. Vorlander, Managing Director, laid the foundation stone of the giant new headquarters to be erected by Honeywell-Brown, Ltd. When they are completed next June, 483,000 cu.ft. of modern architecture will accommodate the administration of all divisions—industrial instrumentation, thermostatic controls, and micro switches.

### Training School

A new training school will be housed in one part of the building. In a fully equipped lecture theatre and laboratory, employees and users from all over Europe will be taught how to apply modern instrumentation to industrial processes and heating and air conditioning systems. The school will also provide courses on micro switching.

Multi-purpose telephone receivers will combine outside call and internal facilities in one instrument. An outside caller will be able to hold a conference with up to four inside speakers, speaking from their own desks. This dual purpose facility, the first of its kind in this country, has been made possible by special arrangement with the G.P.O.

# VICE CHAIRMAN OPERATES NEW MACHINE

*Mr. F. H. Bate, energetic Senior Vice-Chairman of the Midland Section of the Institution of Gas Engineers, took off his jacket, rolled up his shirtsleeves and handled the extractors to withdraw a 10-in. cast iron pipe from a new machine at the Staveley Iron and Chemical Co. Ltd. recently. The occasion was the autumn meeting of the Institution held at the Staveley works, near Chesterfield.*

*NORTH WESTERN CONFERENCE, SOUTHPORT*

# 'GREAT EFFORT HAS BEEN MADE'

## £1 mill. has been Recovered, says Chairman

MR. D. P. WELMAN, Chairman of the North Western Gas Board, spoke enthusiastically of the tremendous effort made by all the Board's employees to make good the estimated deficit of £1 mill. in the year ended last March. 'At our last conference,' said Mr. Welman, 'I told you I wanted you to help me recover £1 mill. Between us all, we have found that £1 mill. and you have added a profit of £750,000. We were facing a heavy loss at the end of the financial year, in fact £1.435 mill. would have to be found. Some part of it we could recover by increased efficiency in our day to day working, but almost certainly there would be a loss of £1 mill.'

He went on, 'It was a bitter blow that we found ourselves faced with further increases of £3 mill. in this year's budget, and we have been forced to raise gas prices for the first time in over two years. The increase is not big, in fact it is insufficient to cover the anticipated outgoings. We started the year with £.5 mill. short, but with improved working we should find this amount and some profit to go with it. No one running a business likes to face an increase in costs not of his own making. This was the reason for our increase in gas prices last July of 1½d. to domestic and 1d. to industrial consumers.

### Increased Productivity

'The increase in cost of £485,000 for wages and salaries interests everyone, and though there are many who would blame the demand for rises in wages and salaries as being responsible for the dire condition of this country's trading results, such a point of view in this area I would not subscribe to. Our productivity per man from 1950 onwards has increased steadily, until now it is 24.5% over the year 1952-53. In certain branches of our activities it is even higher, for instance in the process side of production it has been not less than 30%. If everyone in the country had improved their productivity to half this extent, not only would they have fully earned the increases in wages and salaries, but the country would not be in its present financial position or this industry hamstrung by restrictions in selling.'

### Future Prospects

Speaking of future prospects in the industry, Mr. Welman went on, 'Though we are used to being told how lucky we are to get any coal at all, this is likely to change in the next few years. If restrictions were removed by freeing coal supplies from artificial controls, we have always believed that there would be ample coal for carbonisation and we would be able to buy these coals more profitably. A study of comparative price increases is of interest. Taking 1938-39 as 100, today domestic coal costs 310, industrial 398.

'Coal to power stations is 403, but coal to the North Western Gas Board's works costs 454. This shows a grossly unfair burden on the industry, where coal is properly used and is 150% of the domestic coal increase where so much coal is wasted. This may be changed by three factors; the electrification of the railways by which the fuel efficiency will be raised from 6% to 18%—the 25 kV system will be the most modern in the world; the very large increase in electrical generation by atomic energy; and with the cleaning up of the atmosphere a smaller demand for large coal for domestic use. The production of small coal continues to increase year by year and it is increasingly hard to sell it. The gas industry is in the best placed position to use all the larger coals that will become available in conventional carbonising plant, but in addition research goes forward to using small coals also.'

### New Approach

Mr. Welman went on to speak of the plant being built at Partington by the Gas Council based on a new approach to gasification. 'With the wider range of coal gradings that will become possible, so will the cost of gas made be reduced, and it will be low in carbon monoxide and free of sulphur. But as long as there is demand for solid fuels, so long will the carbonising of coal continue.' Mr. Welman thought that this was likely to continue for at least 15 years under conditions of improving availability of coal, and that with developments such as those going forward at Partington, the industry would change from one working on a tight margin to one working under much easier trading conditions.

### Successful Conference

Mr. Welman was addressing the North Western Gas Board's Conference at Southport. Here were assembled members of the Gas Council, members of the area Board and senior officers as well as representatives of the Consultative Councils throughout the Board's area. This is the third conference held by this Board similarly constituted, and in welcoming the visitors to the conference which included Mr. Owen Francis, of the Ministry of Power, Mr. A. Wilson, the Regional Director of the Ministry of Power and Mr. W. E. Webb of the National Joint Council of Gas Staffs, Mr. Welman called attention to the doubts expressed by many at the first of these conferences as to how such a diverse cross-section of the Board's employees could possibly constitute a successful conference. Not only had that first Conference been a success, but it had now been repeated for the second time.

### Interest Aroused

In these conferences there is always a session devoted to questions and answers as well as the reading of papers. The papers aroused a good deal of interest and those taking part in the discussions were mainly representatives from the Consultative Councils, but the standard of both questions previously submitted to the Board and those asked spontaneously from the Conference floor was extremely high and of great interest to the assembled delegates. The temptation to air purely personal views or obvious grievances seems to have been resisted. As the great majority of these questions are asked by the representatives of the Consultative Councils, it shows how much thought must have gone into framing the questions at the Council meeting and the amount of wisdom shown by the older and more experienced members.

The North Western Board sets much store by the reaction of its manual workers to these conferences and considers that although controversial issues are undoubtedly raised, they are answered in the spirit in which they are asked in a spirit of enquiry to gain information on points that are causing difficulties among the rank and file.

### Pensions

Such general issues are the non-payment of sick benefit for the first three days of illness, but recovery of this amount if the man is away for 12 days, or the question of payment of pensions to manual workers. Mr. Welman dealt with the latter, by saying that he believed that pensions should be made available to manual workers to provide for their retirement and old age in the normal way, and that as soon as the scheme now before the Ministry of Power had been approved, it could be put into effect as quickly as possible. He went on 'I would urge all the younger men to seize the opportunity to enter a pension scheme. It is tempting for a young man or woman to feel he or she needs every penny for setting up a new home, but when one reaches 40 or so, it is far too late to recover the loss of opportunity.' Mr. Welman thought that the older men could give the benefit of their experience to the younger ones.

## Abstracts from the Three Papers at Southport

# 1. THE NEED FOR ORGANISATION

—By A. H. NICHOLSON, Group General Manager, East Lancashire Group.

The trend towards large industrial concerns and towards the grouping of industrial units away from small businesses where the whole panorama could be seen at a glance, in which everyone knew one another, is making industry a more complex form of human association. It is becoming very important indeed that everyone should appreciate their interdependence and we are, in a sense, a team, each in a different position but with a responsibility to the team rather than to ourselves as individuals.

The interests of management and other employees are, in the end, the same thing, and this is particularly so in the gas industry where the provision of an economical, efficient service to the public is more important than the creation of large profits.

It is, therefore, important that we who are part of this large organisation should know the relative importance of our responsibilities, and how and why we are organised to do our job in a certain way—in fact where we fit into the organisation. This is a Conference for joint consultation where we can meet on common ground to achieve a better appreciation of our joint endeavours.

### Organisation

An organisation is a body, or system, or society which is 'organised' and 'organised' is a word that most of us, with our national characteristic for individuality, have no liking for, yet whether we like it or not we are agreed on the necessity for a certain amount of regulation in our daily lives as members of the community.

What then do we mean by 'organisation' and particularly business organisation? It is not, as is commonly supposed, a matter of systems, machines, methods and the like, although these form a necessary part of an effective organisation. Organisation is the method—the best method which can be evolved—by which work may be done systematically and in its broadest sense, it is a structure based on certain principles which render collective effort possible, by defining the duties, responsibilities and authority of each member of the group. It involves the sub-division of all the functions necessary to the successful attainment of the objectives of an undertaking, and their grouping and allocation to individuals in such a way as to ensure unity of effort and the maximum contribution from each individual. The principles on which the structure is based enable a number of persons associated in some joint action to work together as a group, and not as a chance collection of individuals each pursuing his own personal and peculiar purposes with little reference to the common objectives which alone can bring about cohesion.

If we are to get the maximum benefit from our work and recreation then we must arrange our conscious time to provide the fullest possible satisfaction. More often than not, however, others are involved in our particular pursuits, and this necessitates the dovetailing of our activities with those of others and involves the sacrifice of some of our independence. We have to strike a sensible balance between our own objectives and those of the community.

### True of Business

This is also true of business whether it be a one man concern or a large trading company. It is only the size of the pattern which is different. A small business can be conducted on a relatively small pattern because the personnel engaged in it are usually small in number and all the employees are in immediate contact with one another, but as the business grows in size and as each activity widens in scope and responsibility, the part of each individual becomes less diverse and more specialised in character. He becomes more removed from the centre of policy and management and the communication of information tends to become less easy. As he becomes more specialised and more removed, there is a danger that he becomes less conscious of his inter-dependence on others, and so there is a need for a clear definition of functions, responsibility and duties, their orderly arrangement and a co-ordination of effort. Organisation provides the means whereby this end can be adequately met.

What then are the accepted principles on which the formal structure is based? Let us consider them.

Among the principles of organisation may be included its objective, co-ordination, specialisation, authority, and responsibility.

The objective brings an organisation into being. An organisation is not created and given an objective, but the objective is determined and an organisation built to attain it. To be successful an organisation must provide something more than good wages and a common clearly defined objective. To secure effective collaboration it must provide an objective which has a social significance, one which seems to all engaged in the enterprise to be really worth while and worth striving for. The gas industry is a public service with the aim of making a really effective contribution through the provision of smokeless fuels and valuable chemicals to the progressive improvement of public health and the general standard of living. This is a worth while objective with a social significance, which can be briefly stated as 'To give the most efficient smokeless fuel service at the lowest possible cost to the consumer.'

Co-ordination is essential in an action involving more than one individual, e.g., consider two men trying to lift a weight. If one tries to lift and then the other, there is no unity of action, hence no true combination of effort and no effective result. We must have co-ordination of our efforts—it is the *first* essential of organisation.

Until 1949 the gas industry had grown up on a local basis and there were more than 1,000 separate undertakings differing very appreciably in size. Although they had apparently a common objective they had no common policy to assist them towards achieving the objective. They were a number of disconnected units endeavouring through voluntary association to achieve an individual efficiency, but a Committee of Inquiry found in 1945, 'within the limits of the existing structure the industry is reasonably efficient,' but 'the existing structure is restrictive of further progress.'

This necessitated 'a basic change in the structure of the industry.' The 'direction of the required change' was clearly 'towards grouping into larger units.' The intention was to provide the means whereby the industry could achieve a much greater co-ordination of effort and which would allow it to develop in such a way as to enable it to progress by taking advantage of modern developments in techniques and methods which could be applied more economically to larger groups.

### Efforts Co-ordinated

From 1949 then it was possible effectively to co-ordinate the efforts of the 103 undertakings situated in the defined North Western Board's area. The Board decided to divide the area into 17 Groups (later reduced in number to ten) differing in size and scope, but having regard to geographical features, the proximity of undertakings and district characteristics so that the internal organisation of the various activities could be sensibly regulated.

Thus, the machinery is established for the co-ordination of all actions throughout the Area arising from the policy decisions of the Board. It still remains, however, the responsibility of the individual (at all levels) to endeavour to see that no action of his interferes with its smooth running.

*Group Co-ordination.*

What can be achieved by co-ordination and therefore why it is necessary can be seen from an outline of what happens in the East Lancashire Group which was formed in April, 1954, by an amalgamation of the former Blackburn and Burnley Groups.

Specialisation is the term applied to the division of work among individuals so as to achieve the best results. It is not a modern development but because of the vast expansion of industry over the last hundred years its application has become more and more pronounced. The main objective of the organisation

within a group can be sub-divided into specialised objectives..

(a) The manufacture of gas and chemical products at maximum efficiency, (b) the efficient distribution of gas to provide adequate supplies at required pressures wherever it is needed, (c) the promotion of commercial and domestic gas and appliance sales with an efficient service to the consumer, (d) the promotion of industrial gas and appliance sales with an efficient technical and advisory service to the consumer, (e) the promotion of coke sales with an efficient advisory service, (f) the efficient performance of essential administrative duties.

Here there are six distinct and separate groups of activity, and the Board decided that under a General Manager the most efficient operation of these sections would be achieved by making the operational results of each the responsibility of one person who would specialise, in the broad sense of the word, and who is known as a Group Officer. These Group Officers are free to develop, organise and operate their respective sections in accordance with Board policy to obtain the best possible results.

### No Interference

There is no interference in operational conduct, but there is consultation with the General Manager when major changes of any kind are contemplated, and frank discussion and examination of the proposals under consideration takes place. All other senior officers whose work may be affected by the contemplated changes are brought into these discussions, so that effective criticism can be made, and the overall effect of the proposal sensibly appreciated.

The wisdom of this action is sometimes questioned, but its main intention is to improve efficiency in each section of related activities, and to improve economy not necessarily by doing that particular function more cheaply but by improving the general level of efficiency. I would emphasise that the taking away from officers of certain activities thought previously to be within their jurisdiction in no way detracts from their authority—on the contrary opportunity is afforded to increase stature by the achievement of improved results in the essential tasks.

It is pertinent to observe, for example, that before the introduction of central stores control the stock value was nearly £500,000. It is now £200,000.

Authority may be defined as 'the formal right to require action of others,' and the principal may be stated that in every organised group of individuals the supreme authority must be clearly indicated and there must be a well-defined line of authority to every individual in the group. Thus it will be seen that the principle includes what is commonly referred to as the 'chain of command,' which must be clearly defined to ensure that there is (a) a unity of effort, (b) a maximum individual contribution to the attainment of the objective, and (c) that all know and understand the links in the chain of authority which connect them through an immediate superior to the head of the whole undertaking.

It is not in the nature of all of us to be leaders, and we all freely accept and recognise the fact that if any number of persons are to work together purposefully and with cohesion someone has to do the leading. The leader becomes the accepted authority to give the instructions and other members of the organisation take action based on those instructions. It is therefore essential in organisation that the leaders be given authority, that is, the formal right to require action of others.

If a person is appointed to be in charge of a particular group of activities and is to be held responsible for results, he must not only be given authority over all the individuals in the section but he must also know to whom he is in turn responsible and the precise extent of his responsibility. The word 'responsibility' is often used rather loosely, e.g., 'I am responsible for this or that' or 'it is my responsibility to do this or that' when in fact what is really meant is, 'I am responsible to someone for this or that.'

The Board's organisation, therefore, provides that we are all specifically accountable to one authorised person. The pattern is such that the artisan is accountable to his immediate supervisor, and so on along the chain of authority, through the Group Officer, the General Manager, and finally to the Board. This pattern should be understood by employees throughout the organisation, and particularly should be made clear to newcomers.

### Essential Conditions

There are conditions without which no organisation can function efficiently. Of these communication is of great importance, and can be separated into two kinds, recording and passing information to ensure cohesion and understanding, and that appropriate action can be taken by the recipient.

These are vitally important in a large organisation with a high degree of specialisation. Recording and passing information so that necessary and appropriate action can be taken by the recipient is self-explanatory but in some cases it must also co-ordinate effort to ensure that a sequence of separate duties are all performed to enable the final duty to be completed. An example of this is the provision of the necessary labour and materials in the right place at the right time to enable work to be performed according to the intention of the original written instruction.

It will be appreciated that any system which involves a sequence of duties carried out by various people at different places, and not simultaneously, must include a designed system of communication whereby essential factual information is passed to the appropriate centre or individual for the necessary action to be taken. It is fundamental to the system that the facts must be recorded and that consequently there must be suitably designed forms and dockets which give all concerned in the combined operation the factual information necessary for the completion of the work. When such fact recording documents comprise more than one copy, the separate forms when brought together must give a clear record of the completed operation.

It may be that in our industry, with its dispersed centres of employment, where many separate operations which go to make up the whole are not necessarily originated or performed at the same centre, it is not always readily appreciated that the many 'bits of paper' which we have to use are essential. It may be that we do not always appreciate that these bits of paper are in effect communications.

In a paper dealing with Organisation it is perhaps appropriate to refer to criticism often made concerning the volume of 'paper work' or 'form filling' found in large scale organisations.

The Gas Act of 1948 requires *annual accounts* to be prepared conforming with the best commercial standards. The form of these accounts necessitates a detailed break down of expenditure and income and for the benefit of management this analysis is considerably extended to produce more frequent, and more detailed figures which are of value in comparing relative efficiencies over a period, and between comparable units.

The growth of mechanisation of clerical work, although producing results more quickly and economically, and in greater detail than would be practicable by clerical methods, does perhaps require more slips of paper in the primary stages due to the mechanical advantages of recording separate items or functions on separate slips of paper which can be re-sorted and used for more than one purpose. The flow of paper is again increased by the degree of functionalisation and the size of the area. Even though the structure of a very large organisation be kept as simple as possible the complexity and inter-relationship of many routine operations are such that co-ordination between functions and areas can only be achieved by having several copies made of the same form for distribution to all persons concerned.

### Specialisation

The trend towards specialisation in organisation has made it imperative that the education and training of individuals should be undertaken particularly for those engaged in activities which are peculiar or specific to an undertaking.

Ability to perform work capably and according to the standards prescribed and required is not only beneficial to the undertaking's operations, but also contributes to the creation of a satisfactory social climate in the organisation.

No amount of formal organisation in itself is sufficient if a business is to be successful. Neither is it enough to provide good working conditions, good methods, good tools for the job and even to pay well for services capably rendered. Organisation must provide something in addition to these if men and women are to give of their willing best. It must create a social climate in which we all have confidence in each other, a sense of loyalty and also a ready willingness to discuss each other's point of view.

# 2. SELLING FOR THE FUTURE

—By JOHN GRAYSTON, General Manager,
North Cheshire Group.

It is estimated that the gas cooker accounts for over 60% of the total domestic gas sales so its importance to the economic structure of our industry cannot be over emphasised. How then are we to strengthen our hold on this load and protect it from attack and infiltration? First and foremost by encouraging the manufacturers in their striving for better design, better performance and better style for their appliances, for the fully automatic cooker, which has been the salvation of the cooking load in America and for a departure from the traditional when it can bring advancements. Secondly and equally important by an altertness to every new housing prospect, every change of tenancy, and every opportunity for replacement of the out of date appliance.

### Three Other Loads

There are three other every day loads which have even greater gas consuming potentialities than either the cooker or the washing machine. I mean space heating, water heating and refrigeration—and of these space heating is the greatest. There can be no doubt that the heating load is going to go further and further away from solid fuel with every winter that passes; labour saving, cleanliness, speed and convenience are the things householders will look for in the future when they want warmth; central heating and whole house warming are the luxuries of today, but they will be everyman's need tomorrow. I believe myself that it is only the cost of the appliances and apparatus and the cost of their installation which keeps gas heating out of thousands of homes even to-day.

We have just been talking about space heating and water heating and I can put into one word why we have not made the most of both of these loads; what is it that has prevented us selling flueless space heaters and made us afraid of the maintenance of water heaters; it is sulphur.

For the sake of about a halfpenny per therm we have denied ourselves an entré into the 100% efficient flueless heating field and have ruled out the design, mass production and easy selling of cheap water heaters.

The catering trades have always been a happy hunting ground for the technical salesman, whether in the milk bar or the departmental store cafe, the school meals service or the first class hotel. We can hope to recoup some of the lost load on home cooking by concentrating on the catering services. The launderette is one of the best examples one could wish for of a substituted load where gas can give the perfect hot water service.

The industrial load is the expert's especial province but it is the field which is capable of the greatest expansion of all. Since 1950-51 the volume of gas sold for industrial purposes has increased by 36%; it has been the only section of our demand which has shown consistent increases year by year. In an area like the North West the future for industrial gas is limited only by the brains, technical resource and ingenuity of the handful of specialists who work in this field.

The introduction of heat treatment for artificial fibres is going to make gas indispensable to the textile trades; atmosphere control in the heat treatment of steels, particularly alloy steels increases productivity by as much as 20%; atmosphere control is applicable to everything from biscuits to bicycles. The limiting factor in the sale of industrial gas is not price, it is the limit imposed by the absolute dearth of engineers and technologists.

In my opinion, in the long-run, the gas industry will develop into a one fuel industry, and it will be a fuel on tap—in other words—gas. The bare essentials of gas manufacture are today very much as they were 150 years ago, but chemical engineering knowledge, the introduction of hydrogenation techniques and the possibility of the application of thermonuclear energy to coal processing will, one day, convert all the thermal energy of our mother coal into gaseous form.

Until that day dawns, however, smokeless solid fuel will remain one of our principal products and each year we shall have to sell in round figures 1,750,000 tons of coke.

### Far to Go

The basis of coke selling is in the first place that of quality; clean, free burning, low ash, low moisture carefully graded fuel is demanded and the production department has gone a long way towards meeting what is in fact a very tight specification. What I call merchanting is almost equally important; the ease of ordering, the dependability of deliveries, the service given by the deliveryman are all important to the customer, especially so to the household customer. We have a very long way to go in our merchanting and at the risk of repeating something which has already been tried I think the pre-packed coke in non-returnable packages may be the solution.

These primary requirements achieved, coke is the cheapest and most efficient fuel on sale to-day, but it needs to be burnt in appliances which are designed for that purpose so once again we come down to the selling of appliances; the merits of the independent hot water boiler, the closed openable stove, the open hearth fire are all proved beyond all question, but they are not sufficiently known to the general public.

There is, however, a very great difference between gas burning and coke burning appliances even when sold and fixed; a gas burning appliance will burn gas only, but a coke burning appliance will burn other solid fuels and many thousands of open coke grates which have been installed both by ourselves and by many local authorities are not burning coke at all. A sample bag of coke with every grate is very good advertising and a proper follow up with prepaid order cards can make it easy for repeat orders.

The phenomenal success of the Board's prepared solid smokeless fuel Phimax has been an object lesson in many ways to all who are interested in domestic heating and it must be a matter of great disappointment to the Chairman and his colleagues that the vicissitudes of the coal supply position are retarding further progress.

What are the salesman's tools and where does he get them from?

Within the Board's framework of commercial policy, the salesman gets most of his tools from his management and in my opinion management will, more and more as time goes on require to concentrate on selling, more selling and selling again.

First of all the Service Centre, which is the background for most of the selling. During the last six years the Board has acquired and opened 30 new service centres, enlarged and modernised 24 and modernised a further ten. The 64 modern service centres out of 144 demonstrate the Board's policy but without the active support of management this policy can be brought to nought.

Home service is an accepted accessory of sales promotion and it is an extremely popular branch of the Board's public service but unless it is objective it is not always as productive as it might be.

Another weapon in the salesman's armoury is the payment of incentives, commissions and bonuses as a stimulus for promoting sale of appliances. This is perhaps the management's most powerful contribution to sales. It has great advantage of being flexible enough to admit sales efforts by everybody.

### Appliance Census

Management can help both the salesman and itself with a proper consumers appliance census and records. The record can be in 'punched card' form and it is a mine of information; it is the simplest thing in the world to ask the sorting machine to turn out the addresses of premises with cookers over ten years old. This kind of sales intelligence is part of the broader programme of market research which management can apply to forward planning of sales. Sales campaigns themselves are a form of stimulus which have been very popular of late, so popular in fact that one is left wondering whether or not they have been overworked. While a salesman is supposed to thrive on competition there is a very great danger that campaigns become periods when selling by conventional methods is pushed into the background.

I would add to the contribution which policy can make to sales promotion the introduction of credit selling which will be part of our terms of trading before this paper is read. I am sure every employee must welcome this step and regard it as another weapon to be used with 'selling' effect.

# 3. TAKING STOCK

—By W. HODKINSON, Deputy Chairman,
North Western Gas Board.

The increases effected in the delivered cost of coal to the gas industry have progressively, over the past 18 years, been much greater than those applied to the coal supplied to power stations and industry generally, and no less than two-thirds greater than the increases applied to domestic coal.

It indicates quite clearly that the industry is facing a completely different competitive situation from that ruling prior to the war, in that it is compelled to use coal which is now four times more expensive than in 1939 and is trying to sell the refined products gas and coke produced from that coal in competition with domestic coal which is being sold at less than three times the pre-war price, and with electricity.

### Difficult to Reconcile

It is difficult to reconcile this coal price policy with the national desire to make a better use of our main indigenous resource, coal—indeed the figures quoted make nonsense of the policy and moreover they would appear to indicate a large measure of national lip service to the clean air policy. It is also of interest to examine the present pattern of coal utilisation efficiencies and the opportunity they present, with the atomic power programme which we are told is designed to prevent an overall energy shortage due to lack of coal. The atomic energy programme will provide some 6,000 MW of generating capacity by 1965 at a cost of £920 mill. for production plant and the initial atomic fuel charge. This capacity will contribute to the country's energy resources the equivalent of some 18 mill. tons of coal. By transferring some 14.6 mill. tons of coal from the domestic and non-industrial market to the gas industry and utilising the energy content in the form of gas and coke at the overall efficiency of 38%, we would do the work of 32.6 mill. tons of coal and thereby release 18 mill. tons of coal—and this using present techniques at a cost of some £277 mill. or less than 30% of the cost of the atomic power programme.

It would appear quite incredible that in this modern age we should continue to operate a price system which condemns coal to gross inefficiency of use, and encourages a wholesale development in the use of fuels which either cost hard, or should I say hardly earned, foreign currency or increasingly large-scale capital investment.

Unfortunately, this is not the whole of the sorry story in that, whereas coal has previously played an important part in providing basic materials for our chemical industry, today this industry is turning more and more to oil.

In 'Taking Stock' you may well ask how can we overcome the obstacles which would appear to stand in the way of our logical development, and the replies could well be set out as follows:

(1) Persuade the nation and the nation's leaders that there is an urgent need so to adjust their approach to coal as to ensure that it is used to its maximum efficiency.

(2) Offset the present, and I hope quite temporary, competitive position by the combination of maximum efficiency in all our activities with the highest possible standard of service to the consumer and in this latter I include the quality of our products, both gas and coke.

(3) Increase our effort to sell both gas and coke consuming appliances, and place every possible weapon to this end in the hands of our sales organisation.

(4) Develop new methods of processing coal to produce heat on tap and sources of chemicals which, in combination, will more than offset the effect of the present coal price system.

(5) Seek new sources of raw material for the provision of gas supplies.

(6) Solve the problem of sulphur, gum and, so far as is possible, toxicity in gas.

(7) Given the right production cost and quality, develop new approaches to tariffs for the varying markets we serve.

### Steady Progress

The history of the gas industry is a story of steady progress in the technical field over a period of 140 years, to a present stage of high efficiency without fundamental change in the main method of production of coal gas. A number of new approaches to the production of town gas from oil feedstocks have been developed within quite recent times, but it is my view that the future of our industry will, in the main, depend upon our ability to offer a means of utilising coal in the most efficient and profitable manner.

Within our own area the development of the 'Rochdale Process' as a means of increasing the output of our production plants, offered considerable promise as a means of meeting substantial increased demand at low capital and operating cost, but here again its value has been largely negatived by the effect of the substantial increase in the cost of coal on the basic economy of the carbonising process.

In this country the emphasis must be upon processes which are capable of handling small or fine coal as due to the introduction of mechanical mining the coal industry will inevitably produce an ever increasing proportion of this type of coal—indeed sized and large coal is in short supply at the present time, and it is necessary to import large coal to meet the home demand.

We are fortunate in the British gas industry in having at the head of the Gas Council's 'Gasification' Research Station at Solihull, Dr. F. J. Dent and his team of co-workers, who, over a period of many years, have made a close study of the problems associated with the gasification of such coals and the modern method of handling fine materials in reaction, known as 'fluidisation.' The Gas Council have decided to embark upon a development project based upon the results of Dr. Dent's work, and the prosecution of this development work has been placed in the hands of this Board.

In the first instance the plant will operate on a variety of oil feedstocks but, while this work will produce a completely new approach to the production of gas and valuable liquid subsidiary products from oil and, we confidently anticipate, place at our disposal a useful process, this first approach is primarily intended to afford information which will enable us, as quickly as possible, to transfer the technique to the gasification of fine low grade coal.

The technique consists of reacting the feedstock oil or coal with oxygen and steam at a pressure of some 450 lb. per sq. in. to produce a synthesis gas consisting primarily of hydrogen and carbon monoxide. The latter is, by a system known as the 'shift reaction,' used to produce additional hydrogen by passing the synthesis gas over a catalyst in the presence of steam. The resultant gas from these two systems is essentially hydrogen of some 95% purity. This hydrogen gas still at a pressure of 450 lb. per sq. in. is then used to hydrogenate the primary feed stock of either oil or coal in a fluidised system to give a town gas which after purification at these pressures will be completely free from sulphur, free from gum and contain a minimum of the toxic carbon monoxide: additionally the process will yield a substantial quantity of valuable liquid products. We anticipate that this stage of the work will be on stream at Partington within two years time.

### Complete Answer

We have every reason to believe that this new approach to the gasification of fine low grade coal will give us the complete answer to the many forms of competition, but more important still, we believe that success in this venture will open up new approaches which will lead the gas industry into completely new fields of service to the nation. I firmly believe that it will enable this industry to restore coal to its right and proper place as the prime and long term source of refined heat energy and chemicals in this country.

Atomic energy is for purposes of industry a form of heat and naturally we are interested in its possible application as a heat source in our process for the treatment of coal. At its present level of development the heat source from an atomic pile is as low as 350°C. and at this temperature it offers no possible use to us. If, however, and as may be likely in the not too distant future, the heat source could be raised to a level of say, 1,200° to 1,300°C. we have an immediate use for atomic energy for the production of cheap hydrogen in the Dent process and the impact upon the economics and the development of the process would then be quite material.

# The New Law Regarding Cheques

## By T. J. SOPHIAN

THE Cheques Act, 1957, will affect, among others, retailers, wholesalers, and manufacturers. Though a short one, the Act introduces fundamental changes, the effect of which we propose to consider briefly.

First, endorsements: If A drew a cheque on his bank in favour of a named payee, the banker formerly would have run certain risks. He would have been considered negligent and liable to make good the loss if the cheque bore either no endorsement or an irregular endorsement. For instance, if A drew an uncrossed cheque on his bank in favour of Mr. XY, the banker, before he paid out on the cheque, would first have had to satisfy himself not only that the cheque was endorsed, but also that it was properly endorsed.

The banker, however, was never required to know the signature of a person other than his own customer. Therefore, so long as the cheque bore the endorsement of a person purporting to be the payee, the banker would be protected. The endorsement for this purpose had to be exactly the same as the name of the payee. Thus if a cheque was made out to 'X.Y., Esq.,' it would not have been properly endorsed by XY endorsing it 'X' alone or 'Y' alone, or with the addition of any other word such as 'XBY.' This endorsement would have been irregular and the paying bank would have been liable for any loss occasioned if payment had been made to anyone but the payee himself, or to any other person to whom the cheque had been properly negotiated by the payee.

### Liability Removed

What the new Act does is to relieve the banker from liability when he now pays out on a cheque which has no endorsement or is irregularly endorsed. This is subject, however, to the important qualification that the bank must pay out on the cheque in good faith and 'in the ordinary course of business.'

These words, 'in the ordinary course of business,' are of particular significance. A bank, it seems, could not be regarded as so acting where it paid out on an unendorsed cheque to a person presenting it for payment. One can well imagine the risk that may be run in certain circumstances. A person may have an open cheque made out to him as payee, he may drop it in the street, and the finder may then proceed to present it for payment to the bank on which it is drawn. Obviously it could not be said that the paying bank would be paying on the cheque in the ordinary course of business without at least requiring an endorsement by the person presenting the cheque over the counter for payment.

In operating the Act, therefore, the Clearing Banks Committee have stated that endorsements will still be required on cheques cashed or exchanged across the counter.

A cheque may, however, be negotiated, for instance, by the payee transferring it either as a gift or for value to another person, and there may, in fact, be a chain of negotiating parties before the cheque is finally presented to the paying bank. In such circumstances the cheque, before it is paid by the paying bank, will have to be endorsed by the original payee, and by every intermediate holder, but—and this is of importance—it will no longer need to be endorsed as well by the last holder to whom the payment is ultimately to be made, at any rate where the last holder pays the cheque into his own bank for collection for the credit of his account.

Thus, for instance, traders often cash cheques for customers. In such circumstances, the trader must still get his customer to endorse the cheque, but the trader need not himself endorse it as well when paying it into his bank for the credit of his own account.

So far we have been dealing with the paying end. Let us now consider the collecting end, and examine the position of the collecting banker.

Endorsement will no longer be required where a cheque is paid, for collection, into the bank of the payee, for the credit of such payee's account. If the account of the payee is a joint or partnership account, the cheque will likewise be accepted for collection without endorsement so long as the payee is one of the joint or partnership account holders.

Where the cheque is made out in the names of joint payees, endorsement will still be necessary if it is to be credited to an account of which all the payees are not parties.

The collecting banker is now also placed in a more favourable position, where he collects on behalf of a customer a cheque which is *uncrossed*. Under s. 82 of the Bills of Exchange Act, 1882, as amended by the Bills of Exchange (Crossed Cheques) Act, 1906, a banker who in *good faith* and *without negligence* received payment for a customer of a crossed cheque was relieved from liability for having collected or received payment of the cheque, notwithstanding that the customer had no title or a defective title thereto. This protection is now extended to collecting bankers even in respect of open or uncrossed cheques.

The fact that a cheque bears a receipt form does not give it any greater intrinsic value as evidence of receipt. For the cheque itself may be evidence of the payment, and such evidence is not enhanced by the receipt form whether the receipt is on the back of the cheque itself or on a separate document.

Statutory force to this principle is given by s. 3 of the Cheques Act, which provides that an unendorsed cheque which appears to have been paid by the banker on whom it is drawn is evidence of the receipt by the payee of the sum payable by the cheque. An endorsed receipt on a cheque therefore, although it may still be required, appears to be quite unnecessary, unless the circumstances are exceptional. At the same time it is to be remembered that the production of the cheque is merely *evidence* of the receipt of the money by the person named as the payee on the cheque. It is evidence and no more.

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# British Standards for Filler Rods and Wires for Gas Welding

TWO British Standards, Filler rods and wires for gas welding (B.S. 1453:1957); and Filler rods and wires for inert-gas arc welding Part 1 Gas-shielded tungsten-arc welding (B.S. 2901: 1957), form part of a comprehensive range covering filler rods and wires. B.S. 1453 is a revision which brings up to date the 1952 edition and the subsequent amendments to it. B.S. 2901 is a new standard. The two are companion publications in which the presentation now takes the form: General requirements; specific requirements, broken down first into 'groups' of rods and wires, and then into individual specifications; and Appendices, containing test requirements and some notes on welding aluminium-magnesium and aluminium-magnesium silicon alloys. This arrangement will enable the user more easily to 'find his way around' the two publications.

B. S. 1453 deals with steel filler rods and wires; cast iron filler rods; copper and copper alloy filled rods and wires; Magnesium alloy filler rods and wires; and aluminium and aluminium alloy filler rods and and wires. B.S. 2901 contains requirements for the more commonly used ferrous and non-ferrous filler materials although it has been thought advisable at the present time to omit requirements for filler rods and wires for mild steel—this because of the current difficulties encountered in welding this material by the gas shielded tungsten arc process.

Although the rods and wires specified in this British Standard are all suitable for some form of gas shielding, certain rods and wires are not suitable for shielding with a particular gas, and purchasers should therefore ascertain from the supplier whether the rods or wires are suitable for a particular gas shielding.

Copies of these standards are obtainable from the British Standards Institution, 2, Park Street, London, W.1. Price: 6s. each standard.

*Presidential Address to the Manchester District Junior Association of Gas Engineers, October 12, 1957*

# Promoting the Advancement of the Industry

**By J. K. LORD, M.Inst.Gas E., A.M.I.Chem.E., A.M.Inst.F.,**

STATION ENGINEER, STOCKPORT UNDERTAKING,
NORTH WESTERN GAS BOARD.

I BELIEVE that the advancement of the gas industry depends upon two things. The provision of a dependable gas service to its consumers at the lowest possible price, and a gradual development into a chemical industry of much wider scope than at present. It is regrettable that every step towards the former objective, in terms of greater efficiency and productivity, which would have meant cheaper gas to the consumer, has consistently been negatived by an increase in the price of coal. One reason advanced for the latest increase was the need for the Coal Board to provide more of its capital out of earnings, so presumably we are now helping to buy vast new carbonising plants for the Coal Board, while tightening our own capital expenditure belt another notch. The gas industry is in the somewhat curious position of being dependent on two of its competitors for the supply of its raw materials.

The electrical generation industry is being partially released from a similar position by the application of nuclear energy to the generation of electricity. The joy and vigour with which the Central Electricity Authority have entered into this programme appears to suggest that they at least see some advantage in being a little less securely tied to 'Mother' Coal Board's apron strings.

I do not see that it is likely or even desirable that the gas industry can expect a similar degree of independence, for after all, we do claim to make the best use of the nation's coal. If, as I believe to be the case, developments are at hand which will not only give us an enhanced range of choice of raw materials, but at the same time permit of an expansion in the range and value of our products, it cannot be other than to the ultimate benefit of the gas consumer.

## Use of Nuclear Energy

New processes apart, it is not beyond the bounds of possibility that the carbonising process itself could make effective use of the application of nuclear energy yielding heat-basis conversion efficiencies approaching 100%. The new processes themselves might ultimately be able to use nuclear energy as a source of heat and power.

You will gather from the foregoing that I believe the gas industry to have excellent future prospects, but that it faces a rather difficult transitional period during the next six or seven years. It is obvious that the new era will come all the sooner if a strong and healthy position can be maintained in the meantime. During this period we shall be faced with intensive competition from the coal, oil and electricity interests and the part that we of this Association can best play, is by doing all in our power to ensure that gas is made and distributed at the lowest possible cost.

I would have liked to have discussed the competitive position of our products at greater length, but I feel that others are more competent to deal with this subject than I am. I would, therefore, like to devote the remainder of this address to some facets of management at undertaking level, a subject with which I feel more at home and a field in which I believe much is being and can be done to ensure that we hold or even gain ground while new techniques are developed and brought into operation.

The Portwood works at Stockport is no show-piece. To use a phrase often heard on radio it is 'strictly for utilitarian purposes.' The lack of glamour is largely due to a somewhat congested site, considerable expansion having taken place over a long period of years within the original confines. There are not a great many works producing up to 15½ mill. cu.ft. per day on a ground area, including coal, coke and gas storage, of only 13 acres. In spite of this, the works is by no means inefficient, as I hope to show.

One lesson I have learned in the years I have been associated with gasworks management is that no two gasworks are alike. This may appear to be a statement of the obvious, but it is a fact ignored at one's peril. Each works has its own individuality. So, too, have groups of workers and even individual employees.

## Study Needed

In order to achieve the best possible overall results the works manager should study very carefully these individualities before deciding on the 'modus operandi' best suited to a particular works. What proves to be successful at one works may well prove to be totally unsuitable at another.

It follows that the manager should know his staff, his key men and his static population of employees particularly well. Only by so doing can he ensure that each man is in the job and receiving the treatment best suited to his individual characteristics. A friendly and understanding atmosphere must be established between management and employees based on mutual trust. Nothing is ever achieved in an atmosphere of dissension, acrimony and mistrust, but increased productivity is the inevitable result of harmonious relations. These conditions are not always easily achieved and are seldom the result of one man's efforts. The co-operation of a virile and enthusiastic staff is an essential pre-requisite—so is patience. Joint consultation also plays a major rôle in establishing and maintaining the right atmosphere.

In pursuit of our objective of keeping the cost of gas into holder at a minimum, it is necessary to determine with care the directions in which the limited capital and revenue resources available can best be utilised. Obviously, safety of the person and of the plant must always be top priority, but this apart, I suggest that the maintenance of the retort settings in top class condition must receive first consideration. A therm lost in the retort house can never be put back into the gas stream, even by the finest ancillary plant imaginable. Peak efficiency in the retort house is the foundation on which to build consistently good overall results.

It may appear to be rather paradoxical, but most is usually being achieved when least seems to be happening. Nothing is better calculated to send results plummeting.

than an uneasy progression from one crisis to the next. Once the rhythm of operations is disturbed, the consequences soon show in the balance sheet. This is one of the main reasons why base-load stations usually show consistently good results.

I would like to conclude this address by describing very briefly three major modifications at Portwood which, together with some minor modifications and the increased productivity and efficiency emanating from the policies outlined above, have resulted in the cost into holder at the present time being very little different from five years ago, despite the increases in coal price, freight and wages, etc., which have occurred in the meantime.

During my first two winters at Portwood very heavy gas demands were experienced. Due to the fact that approximately half of the gas made was sent out at high pressure (10/15 lb. per sq. in.), the peak compression loads were quite exceptional. At such times it was a common occurrence to see the works main steam pressure gradually dwindle from the normal working pressure of 120 lb. per sq. in., to perhaps 60 lb. per sq. in., or less, in spite of the efforts of four coke fired Lancashire boilers, on full blast. Every possible steam user would be shut off in an effort to ensure that at least the compressors and exhausters were kept going. This was disruption of the type mentioned earlier, and such a state of affairs could not be allowed to continue. A careful survey of all steam users was made and separate steam balances prepared for summer and winter conditions with all the likely variations in plant combinations.

### Plan Evolved

From the information thus gained a plan was evolved which took the following form. The first step was to change from steam to electric drive for the C.W.G. exhauster because periods of maximum send-out coincided with periods of maximum C.W.G. production. The second and third steps were modifications to the high pressure steam ring main and the construction of a low pressure steam ring main to collect the exhaust steam from all prime-movers throughout the works. Low pressure steam from this ring main was then supplied to every process to which it could be adapted, such as steam to retorts, liquor plant, water softening and through heat exchangers for works heating.

The high and low pressure steam mains were interconnected through a Hopkinson-Carlstadt regulator so that any pre-determined pressure (usually 7 lb. per sq. in.) could be maintained in the low pressure system. If there is an excess of low pressure steam it is automatically vented to atmosphere; if a deficit, high pressure steam is similarly admitted from the high pressure system.

We have now reached the position where solid fuel raised steam is only required for the peak compression periods or when waste heat boilers are down for repairs. The use of coke-fired boilers will soon be completely eliminated (except as stand-by) by the installation of an electrically driven compressor.

Some idea of the economy already achieved may be gained from the fact that during the year ended March, 1954, 6,904 tons of coke were used on the Lancashire boilers and in the year ended March, 1957, 1,309 tons of coke plus 1,457 tons of breeze. At today's standard prices of coke and breeze this represents a saving in fuel alone of £27,231 per annum. The volume of gas made and compressed was almost identical in these two years.

During the above mentioned periods when we were in some difficulties with steam, we also suffered from occasional electrical breakdowns. You will no doubt appreciate that when the two coincided we were presented with some very interesting situations. The electrical failures were also largely due to the record gas demands, resulting in heavy over-loading of the existing works electrical system. For instance, the two C.W.G. plants were run in tandem, fairly continuously, for the first time.

The existing electrical distribution installation, from the incoming mains transformer to the works cables and switchgear, was not only well under capacity for the ever-increasing loads but was also rather ancient and unreliable. We not only had complete interruptions of supply from time to time, but also had substantial voltage drops at peak demand periods, resulting in over-heated motors and consequent increased maintenance. The electrical distribution system has now been completely overhauled.

The incoming supply is now taken from the 6.6 kV ring main through new switchgear. One supply is taken at 6.6 kV to our works 'B' sub-station where it is transformed to 440 volts to feed the 'B' sub-station distribution panel which is equipped with English Electric H.R.C. fused switchgear. Provision is made in this sub-station for taking a 6.6 kV supply prior to the transformer for feeding the meter at this voltage which is to drive the new gas booster, when installed. The other supply is transformed to works voltage adjacent to the ring main switchgear, and is fed to our works 'A' sub-station through new cables. A link line, with suitable interlocking safeguards is provided so that both the 'A' and 'B' sub-stations can be fed from either transformer. New distribution lines have been run from the H.R.C. fused switchgear in the two sub-stations to the points of utilisation.

The benefits accruing from these modifications, although not as spectacular financially as those previously described are none the less very substantial. We are now able to operate with two fewer electricians (and mates) than heretofore and the emergency call-out of electricians has virtually ceased. The contribution which this re-organisation has made to the smooth operation of the works, in addition to the savings in man-power, is too complex to be estimated precisely in monetary terms.

The carbonising plant at Portwood consists of six sections of retorts (12 retorts per section) four sections being in one block and two sections in another.

### Coke Handling Method

In the early '50's, the method of coke handling from the retorts on 1-4 sections, was by hand propelled skips running on rails. The skips could be pushed either to discharge-hoppers within the retort house, whence the coke was elevated by the coal/coke G.B. conveyors to internal screening plant and producer feed hoppers, or outside the retort house where the skips could be discharged into the hopper of another screening plant. The skips could also be picked up at this point by a travelling crane for the stocking of the unscreened coke. On sections 5 and 6, the coke was collected from the retorts by means of skips carried on the chassis of petrol driven Lister trucks. In this case also the coke could be discharged into G.B. conveyor hoppers for transfer to the internal screening plant and producer hoppers, or could be taken to the outside screening plant. If it was required to put the coke from these sections to stock, the special skips could be picked up by a telpher for transfer to the stocking area.

There were a number of undesirable features inherent in this method of working. The use of hand propelled skips was slow and arduous work and heavy on man-power. The use of G.B. conveyors for both coal and coke meant that during the day-time when coal was being elevated no coke could be dealt with by the internal screens. This presented a very real difficulty when it was desired to reclaim coke from stock. The wear and tear on the G.B. conveyors was very heavy due to their almost continuous use and consequent difficulty of carrying out

preventive maintenance. The method of handling coke to stock by crane and telpher was cumbersome and time-consuming and reclamation from stock even more so.

The coke handling system now in use has been designed to overcome these difficulties and to provide greater all round flexibility while economising in man-power. Two parallel sets of coke screening plant have been installed in the retort house. These are fed by independent skip hoists which are fed from ground level hoppers. The G.B. conveyors need now only be used for the coke for the producer fires, retort filling and C.W.G. plant. All coal and coke elevation by these conveyors can now be carried out during normal daytime hours. Repairs and maintenance of this plant have been greatly facilitated and the costs thereof very considerably reduced. The use of the crane and the telpher has been abandoned, all coke now being put to stock by means of a mobile mammoth stacker, fed by a 'Lo-band' loader.

Coke discharge from all six retort sections is now carried to the skip hoist hoppers or the G.B. conveyor hoppers by means of tipping skips carried on 'Brush' electrically driven vehicles. These vehicles have extremely low running costs and are very manœuvrable. Four mains-operated trickle chargers re-charge the batteries during the vehicles' off duty periods.

The introduction of these vehicles together with minor re-allocation of duties, has enabled us, in co-operation with the trades union concerned, to achieve a considerable saving in man-power. The former system required 15 shift-workers and three day-shift workers per day, when all retort sections were working. The present system requires 11 shift-workers only.

In conclusion, may I return to an earlier theme. I believe that to succeed we must make cheap gas. The two acknowledged ways of achieving this with our present production methods are increases in efficiency and productivity. I think that there is now not much remaining to be done in the realm of efficiency, but that there is, perhaps, a little way to go yet before we can say that productivity has reached its peak.

There are some major problems to be faced before the methods of improving productivity, which have proved so successful in many manufacturing industries, can be applied with equal success to the gas industry. Nevertheless, I feel that an effort to resolve some of these difficulties might well prove worthwhile.

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## *BOOK REVIEWS*

# Internal Audit and the Public Boards

'INTERNAL Audit in the Public Boards,' by W. L. Abernethy, with special chapters on Electricity and Gas Supply by E. N. Judge and F. W. Johnson respectively, Shaw & Sons Ltd., price 27s. 6d., has been written to help those responsible for controlling the receipt and disbursement of the very large sums of money that are collected and disbursed by the public boards in this country. The part of the book dealing with the general principles is applicable to the internal audit in public boards, local authorities and hospitals, but two additional chapters are included which refer specifically to accounting arrangements in the electricity and gas industries. These have been written by experts in these two industries.

A book such as this is concerned with facts rather than opinions. It is therefore of particular value to staff employed on internal audit work in the public boards and as a textbook for students about to sit for professional accountancy examinations, particularly the intermediate and final examinations of the Institute of Municipal Treasurers and Accountants. In the special chapter on the gas industry the author has taken particular pains to show the duties and obligations laid on the gas board accountant by the Gas Act, and makes the many special points to be looked for in this industry abundantly clear.

# Design of Industrial Ovens and Furnaces

'INDUSTRIEOFENBAU,' (Design of Industrial Ovens and Furnaces) by J. Henri Brunklaus, published by Vulkan Verlag Dr. W. Classen, of Essen, price, Dm. 46 (about £4), presents the fundamental principles on which the design and the construction of all types of industrial ovens and furnaces are based, and it is claimed that no book has as yet been published in the world which covers such a wide field. After a description of the various principal types, the refractories used in the construction are critically reviewed and the formulae for the calculation of linings, arches and casings are developed. A detailed section follows which expounds the principles of combustion, heat transfer, efficiencies, heat losses and heat storage, and these subjects are illustrated by a large number of numerical examples. The formulae for the gas flow and the pressure distribution throughout the combustion chambers, flues and chimneys are derived from first principles. The design of burners is dealt with in a similar way.

The next chapter contains the fundamentals of the drying process and of infra-red radiators. The design of melting furnaces, forging furnaces and of drying ovens is introduced by means of numerical examples, the solutions of which are given in great detail. In the last chapter, the effect of false air is calculated and the main outlines of temperature measurement and of automatic temperature control are described.

An Appendix is reserved for special problems like the internal recuperation by means of permeable refractories, a graphical method of establishing the wall losses and wall temperatures, and the Schmidt method of calculating the temperature distribution under non-stationary heat flow conditions, i.e., for the heating-up or cooling-down periods of a furnace.

This book is useful not only for students, as an introduction into the thermodynamic and heat flow problems, but also as a reference book for designers and other engineers who face problems in the construction and the operation of industrial ovens and furnaces.

# The Book of pH.

TO the uninitiated layman there is always something vaguely mysterious about pH. Even if an attempt is made by a physical chemist to describe not only what this quantity is, but what is its importance both in the laboratory and in industry, there still may be difficulty in making it perfectly clear. 'The Book of pH' by R. B. Webber, M.A. (Cantab.), George Newnes, Ltd., 30s., supplies the need felt by many entering industry who may be expected to know something of this important quantity and find difficulty in getting an exact and satisfying definition. The subject is set out in the simplest language and the salient points are illustrated by excellent diagrams. The meaning of such expressions as hydrogen ion or hydroxyl ion concentration and their effect on acidity and alkalinity is clearly explained. The measurement of pH by indicators or by the use of different electrodes is made abundantly clear.

The book is well printed on art paper and attractively bound.

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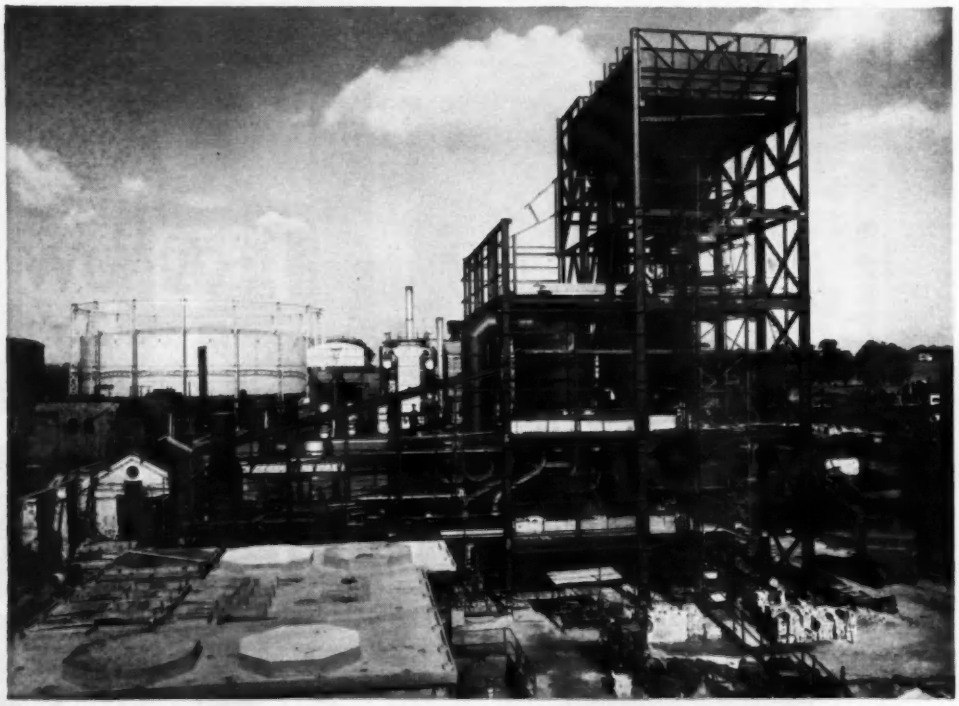

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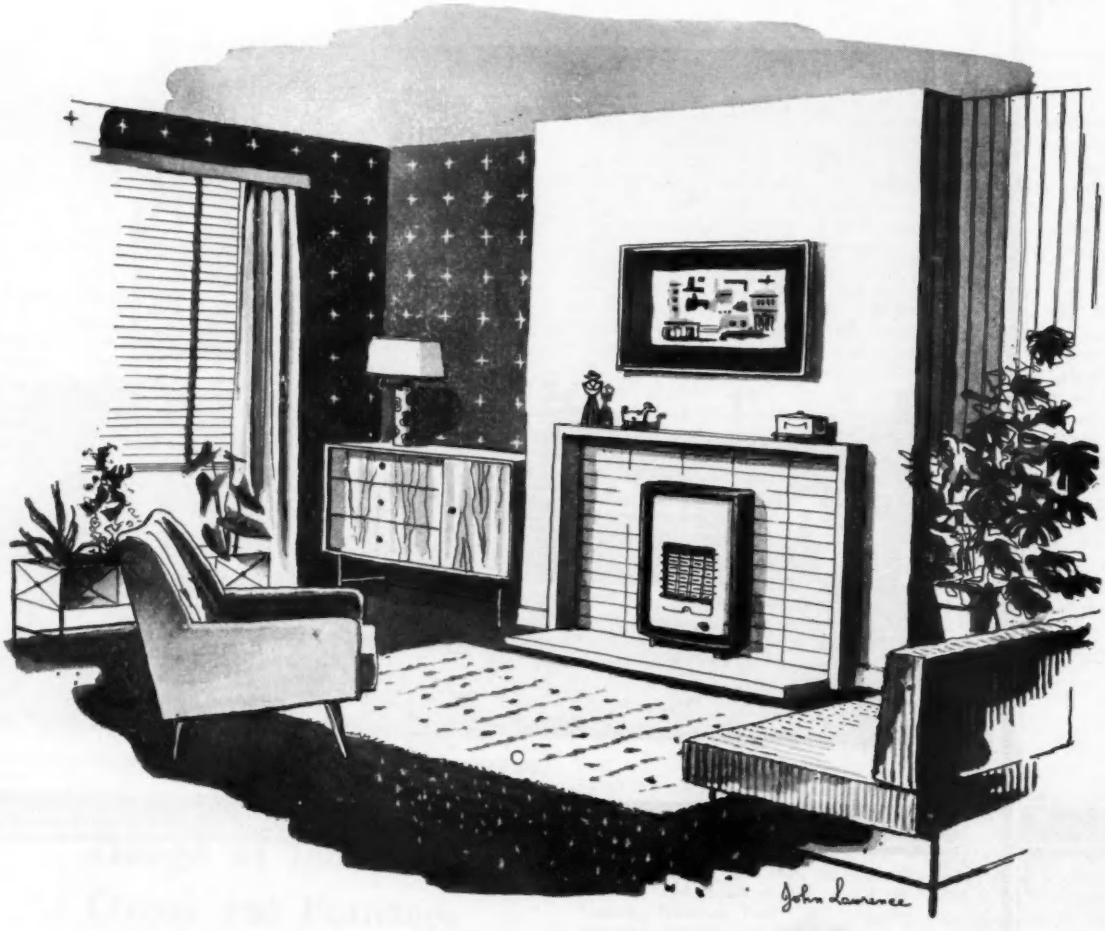


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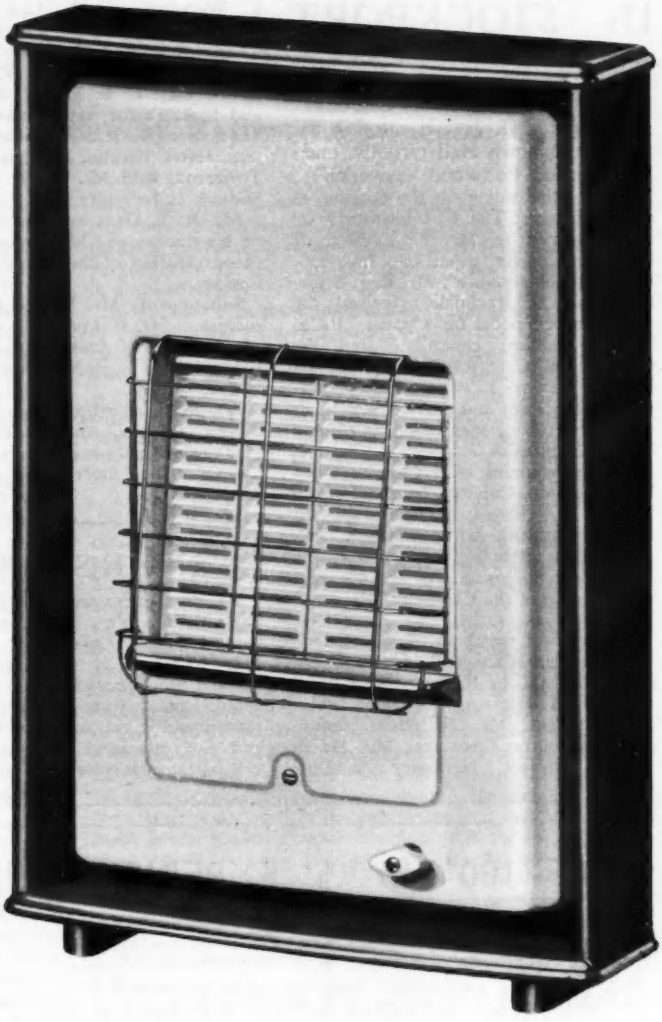

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# MANCHESTER JUNIORS MEET IN STOCKPORT

THE Manchester District Junior Association of Gas Engineers held their 59th annual meeting at Stockport Town Hall recently, and also visited Portwood gasworks.

The meeting was made the occasion of various awards: The F. Johnstone prize was presented to Mr. P. Tipping, of Rochdale, for his paper on 'Investigations into coke quality'; Mr. R. J. Bramhall, also of Rochdale, received the Board's silver medal for a paper entitled 'Electro-chemical corrosion,' and the Col. W. M. Carr memorial prize was awarded to Mr. J. W. Rodgers, Chairman of the Sales and Service Section of the Board, for a paper which he entitled 'Good Companions.'

At the beginning of the meeting, Mr. W. Hodkinson, Deputy Chairman, North Western Gas Board, introduced by the retiring president, Mr. T. Nicklin, welcomed those attending, on behalf of the Board, and apologised for the unavoidable absence of the Chairman, Mr. D. P. Welman.

Officers and members of the Council elected by ballot for 1957-58 were: President, Mr. J. K. Lord; Senior Vice-President, Mr. J. Hepworth, of Sale; Junior Vice-President, Mr. N. Olsen, Southport; Honorary Treasurer, Mr. H. B. Gidlow, Prescot; Honorary Auditors, C. Worswick and F. Law; Honorary Secretary, Mr. T. W. Pickthall, Bury; Council, Messrs. J. Grayston, R. J. Bramhall, I. Brook, H. Dobson, W. F. Howell, D. W. Kay, L. B. Mayoh, M. Redman and J. A. Taylor; representatives on the Lancashire District Education Committee, Messrs. Nicklin, Pickthall and L. G. Townsend, with Mr. H. H. Thomas, of Salford, as Secretary.

Mr. R. L. Greaves was congratulated on his election as Chairman of the Manchester District of the Institution of Gas Engineers.

Subsequently Mr. Nicklin invested his successor, Mr. P. Lord with the insignia of the office of President, and received from him the Immediate Past President's badge.

Mr. Lord, on rising to give his Presidential Address, announced that Mr. Hodkinson had been elected by the Council as an Honorary Member of the Association.

## New $H_2SO_4$ Plant

To meet increased demand at their Eaglescliffe, Nr. Stockton-on-Tees, works, British Chrome & Chemicals, Ltd., have placed an order with the Power-Gas Corporation Ltd., for a new contact plant with an output of 100 tons of sulphuric acid per day of 95% and 70% strengths. Elemental sulphur will be the raw material.

## Engineers Visit East Greenwich

EAST GREENWICH gas works of the South Eastern Board was recently visited by members of the Society of Engineers and their ladies. The Society was established in 1854 as the Putney Club, taking its present title in 1857, and is the third oldest national engineering society in Great Britain.

This year's President, Mr. E. C. Le Jeune, an Assistant District Manager, Metropolitan Division, was accompanied by Mrs. Le Jeune. Mr. Le Jeune received part of his early training at the Station over 34 years ago.

### The Toast

The party was entertained to lunch in the works institute where they were welcomed on behalf of the Board by Mr. B. C. Hinwood, Senior Station Engineer, who proposed the toast of 'The Society,' and Mrs. Hinwood. Mr. T. Parfett, a past President, thanked the Board for the opportunity offered the Society to visit such a large and interesting works.

Other visitors included past Presidents Mr. E. Sugden Waddington and Mr. V. Wigmore with their wives, and Capt. H. F. Jackson. Miss A. H. Cook, Secretary of the Society, was also present.

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**British Coal Utilisation Research Association**

# FROM COAL TO COKE

## Lecture by Raymond Cheradame of France

THE coal science lectures of the British Coal Utilisation Research Association were established in 1951, 'as a symbol of the belief that true advances come only from patient enquiry into fundamental principles, and as a recognition of the need to apply recondite researches to practical needs.' The sixth in the series of these lectures, delivered in London on October 16, illustrated the relevance of these statements. The speaker was M. Raymond Cheradame, Technical Director General of the Centre d'Etudes et Recherches des Charbonnages de France (CERCHAR)—the research organisation of the nationalised French coal industry—and the title of the lecture was 'From Coal to Coke.'

M. Cheradame's address reviewed the difficulties that the French have encountered in using certain of their indigenous coals for the production of metallurgical coke, and dwelt more particularly upon the efforts that CERCHAR has made to solve them. The major part of France's iron ore occurs in Lorraine, where there are also considerable reserves of coal. Unfortunately the iron ore native to the area is poor in quality, and requires large, strong coke for its satisfactory treatment in the blast furnace. M. Cheradame pointed out that the coals of the Lorraine field are, by nature, unsuitable for the production of such a large, strong coke and that although the Lorraine collieries had been making coke for a long time this was so small and friable that it had been confined to the domestic market. To meet the needs of the steelworks it had been the practice for coke to be imported from the Ruhr or, alternatively, for coking coals to be purchased in order that they might be mixed with Lorraine coals to give the properties demanded of a metallurgical coke.

### Urgent Problems

Clearly then, it was an urgent and fundamental problem for the French to find means to produce a satisfactory metallurgical coke from the highly swelling coals of Lorraine, and it was to this problem that CERCHAR addressed itself afresh in 1950 when a new programme of research was initiated. Prior to this date the work of CERCHAR had been confined largely to a scientific study of the fissuring of coke during its formation, little attention being given to the direct improvement of the large-scale coking process. Since 1950, however, the basic researches carried out in the Verneuil laboratories of CERCHAR, both in laboratory apparatus and small ovens treating up to 20 Kg. of coal, have been supplemented by practical tests on full-scale ovens erected for experimental purposes at Marienau in the Loraine coal basin. These test ovens are under the direct control of CERCHAR.

Turning to a more detailed review of the fundamental researches recently undertaken at Verneuil, M. Cheradame described a method by which the fissuring of a single coal on heating and cooling could be examined by observation with X-rays. This method could be combined with the use of a ciné camera, taking one frame per 30 seconds, to observe the progress of the plane of fusion, the plane of resolidification, and the development of fissuring. It was confirmed that a study of the mechanical variations of the solid in the complete interval between resolidification and the termination of heating was necessary, and a Joumier dilatometer was adopted for the purpose. The records made with this dilatometer showed the progressive contraction of semi-coke from 500 to 1,000°C., and also the variation in the rate of contraction. The contraction rate, which depends on temperature, starts from a maximum at resolidification, the maximum having a very different value for a good coking coal and a Lorraine coal.

It was observed that, for a thin slice of coal, the difference of the contraction rates due to the temperature differential induced only curvature. On a thicker slice the curvatures that the various layers wanted to assume were not compatible; there were, therefore, some residual contractions or expansions that induced tensions growing with the thickness, eventually reaching the breaking point. Some fissures were then produced perpendicular to the plane of heating. This is what happens in a coke oven.

In parallel with these observations a mathematical analysis of the phenomena made it possible to describe the relation of cause and effect in fissuring in more precise terms. The fissures that are produced are spaced out at an interval which is inversely proportional to the coefficient of contraction of the coke soon after its resolidification, proportional to the permissible extension of the coke before rupture in the range 500 to 700°C., and inversely proportional to the thermal gradient in that range.

Another avenue of research explored at CERCHAR and discussed by M. Cheradame was the investigation of the carbonisation of blends of two fusible coals. He described how blends of different proportions of a good coking coal and a 'flaming' coal with high volatile matter behaved when carbonised. From the experimental results obtained by CERCHAR he was able to deduce two rules for the utilisation of fusible coals in industrial blends. These were (1) that their anti-fissuring 'efficiency' is greater the higher the temperature of resolidification and (2) that the richer in volatile matter and the less fusible the 'flaming' coal, the more fusible and rich in volatile matter had to be the coal mixed with it.

He then discussed the relative efficiencies of coke dust and chars as inert additives in blends, and reviewed the work done on blends containing non-fusible coals. He pointed out that inert additives needed to be substances that did not contract much in the region of resolidification, with the result that the mean contraction rate became less. On the other hand, at higher temperatures, there were bound to be stresses due to relative contraction of coal and inert constituents.

The reactivity of coke has been selected by CERCHAR for study in its future programmes of fundamental research, and in this connection the Centre has already developed an original technique by means of which it is possible to measure reactivity to $CO_2$ at temperatures of 1,200°C., 1,300°C. and 1,400°C. These reactivities appear to correlate reasonably well with the performance of foundry cokes; some other properties, such as porosity, have been measured in various ways during the course of the same work.

### Good Coke Not Produced

Experiments on the battery of ovens at Marienau commenced with attempts to adapt the Carbolux process to the production of metallurgical coke. It was found, however, that the good coke produced at Marienau was not reproduced when the adapted process was used at a large steelworks, and this was considered to be due to the difference between the care surrounding a research test—even on full-scale plant—and the conditions, including coal deterioration, that are characteristic of industrial coking practice. From the Carbolux process attention at Marienau was turned to the application of blending and increased charging density, and good results have been obtained from these investigations.

In M. Cheradame's view, three main ideas would dominate future research on coking. These were, first, that the chemical use of hard coal in the form of metallurgical coke should be developed, second, that anthracite and, more generally, smokeless fuels should be used for solid fuel domestic heating and, third, that the range of coals which could be coked corresponded, in many countries, to too small a proportion of coal output, and should be extended.

After the lecture a dinner in honour of M. Cheradame was held at the Savoy Hotel; at this function the Coal Science Medal was presented to M. Cheradame by the President of the B.C.U.R.A., Dr. W. Idris Jones, C.B.E.

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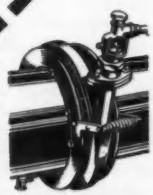

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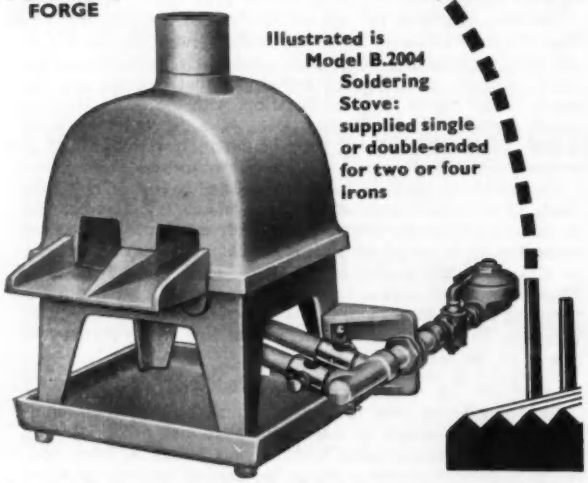

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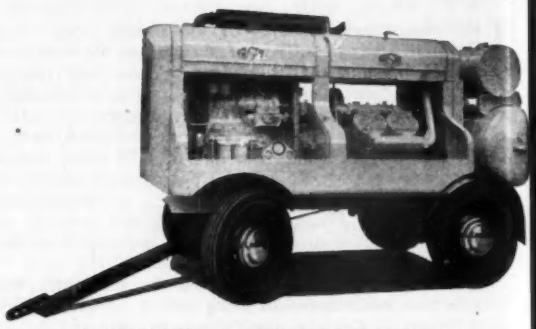

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(*Classified advertisements continued on page* 250)

## EDUCATIONAL

### WOODALL-DUCKHAM EDUCATIONAL AWARDS

**APPLICATIONS are invited before November 30,** 1957, for two awards to be made by The Institution of Gas Engineers from the Woodall-Duckham Educational Fund. Each award will enable the holder to attend two of the Summer School Courses at the Institute of Gas Technology, Chicago, in the Summer of 1958. One award is for the courses on Natural Gas Production and Processing and on Natural Gas Fuel Utilization and the other for those on Natural Gas Transmission and Natural Gas Distribution. Applicants should preferably be between 25 and 32 years of age and should either hold a University degree in engineering or science or be a Corporate Member of The Institution of Gas Engineers, or of some other appropriate professional institution. The value of each award (including subsistence and travelling expenses) will be £500.

Conditions from the Secretary, The Institution of Gas Engineers, 17, Grosvenor Crescent, London, S.W.1.

## APPOINTMENTS VACANT

### SOUTH EASTERN GAS BOARD

LABORATORY STAFF, MEDWAY DIVISION, ISLE OF GRAIN WORKS, KENT.

**APPOINTMENTS will be made shortly of staff for** the Works Laboratory at the new Isle of Grain Works where town gas is to be produced from petroleum by methods employing new and developing techniques. Applications are invited from persons having qualifications and experience in chemical or instrument technology. Initial salaries would normally lie within the range of £600-£800 per annum, but for some posts a higher starting figure would be offered to applicants of sufficient standing.

Applications, quoting reference V 10/858 should reach the Personnel Manager, South Eastern Gas Board, Katharine Street, Croydon, within seven days.

### NORTHERN GAS BOARD

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**APPLICATIONS are invited for the position of** SHOWROOM MANAGER at Darlington Unit.

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Applications stating age, qualifications, details of experience and the names of two referees should be addressed to the undersigned not later than November 15, 1957.

F. WILSON,
Divisional General Manager.

Gas Office,
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October 23, 1957.

### EASTERN GAS BOARD

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**APPLICATIONS are invited for the above position.** The salary will be within Grades A.P.T. 5/6 of the National Joint Council for Gas Staffs, Provincial 'A' Scales.

The successful candidate may be required to pass a medical examination and unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Candidates should possess a Certificate of the Institution of Gas Engineers (Manufacture), or its equivalent and be experienced in the operation and control of all gas manufacturng and ancillary plant.

Applications stating age, qualifications and experience together with the names of two Referees should reach the undersigned within 14 days of the appearance of this advertisement.

J. HUNTER-RIOCH,
General Manager.

52, Sidney Street,
Cambridge.

### EASTERN GAS BOARD

(CAMBRIDGE DIVISION)
TECHNICAL ASSISTANT (DISTRIBUTION)

**APPLICATIONS are invited for the position of** TECHNICAL ASSISTANT (Distribution) at the Divisional Chief Office at Cambridge.

Applicants should have had good practical experience of main and service laying and in the operation of a Distribution Department of a medium or large undertaking. They should also possess the Higher Grade Certificate of the Institution of Gas Engineers in Gas Engineering (Supply), or equivalent qualification.

The successful candidate will be required to assist in the preparation of all types of mainlaying projects, including the design of housing estate layouts, feeder and trunk mains and integration mains.

The salary will be within Grade A.P.T. 9 Provincial A (£795 to £895) with placing according to age and experience.

The successful candidate will be required to pass a medical examination and, unless already subject to a Pension Scheme, by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Eastern Gas Board Staff Pension Scheme within six months from taking up the appointment.

Applications giving full details of training, qualifications and experience, together with the names of two referees, should be sent to the General Manager, Eastern Gas Board (Cambridge Division), 52, Sidney Street, Cambridge, by November 20, 1957.

### SOUTHERN GAS BOARD

INDUSTRIAL REPRESENTATIVES

**APPLICATIONS are invited for the posts of** INDUSTRIAL REPRESENTATIVE in the Oxford and Reading Regions.

Applicants should be suitably qualified and have experience of sales of gas to industrial and/or commercial premises.

The starting salary will be within Grades A.P.T. 7-9 (£705-£895) according to experience and qualifications.

The successful candidates will be required to pass a medical examination and, unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required to join the Board's Staff Pension Scheme.

Applications, marked 'Industrial Representative, Oxford (or Reading) Region' at the top of the letter of application, and accompanied by a separate sheet showing name, age, address, present appointment and salary, and giving full details of education, experience and qualifications, together with any other supplementary information, in that order, should be addressed to reach the Personnel Manager, Southern Gas Board, 164, Above Bar, Southampton, not later than November 29, 1957.

### SOUTH EASTERN GAS BOARD

HOME SERVICE ADVISER
EAST SURREY DIVISION

**THE successful applicant will be required** to conduct demonstrations, give lectures and advise consumers in their own homes in the use and care of gas equipment, initially in the Caterham district.

Applicants must have undergone training for two years at a recognised training college of Domestic Arts and hold a diploma in cookery, housewifery and laundry work.

Salary, 21 years of age and over, £439-£664 p.a. rising to £750 p.a. according to experience. Applications quoting reference V10/845 should reach the Personnel Manager, South Eastern Gas Board, Katharine Street, Croydon, within seven days.

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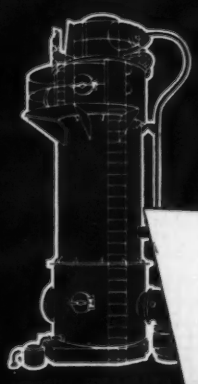

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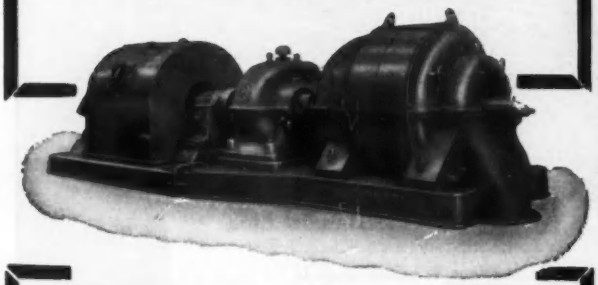

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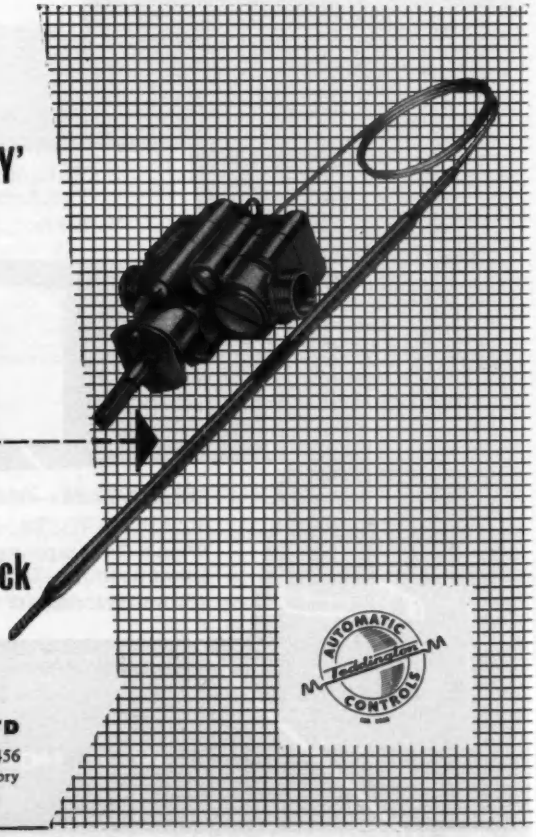


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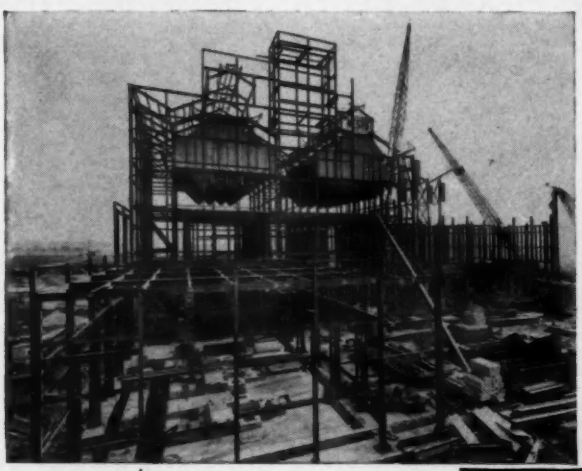

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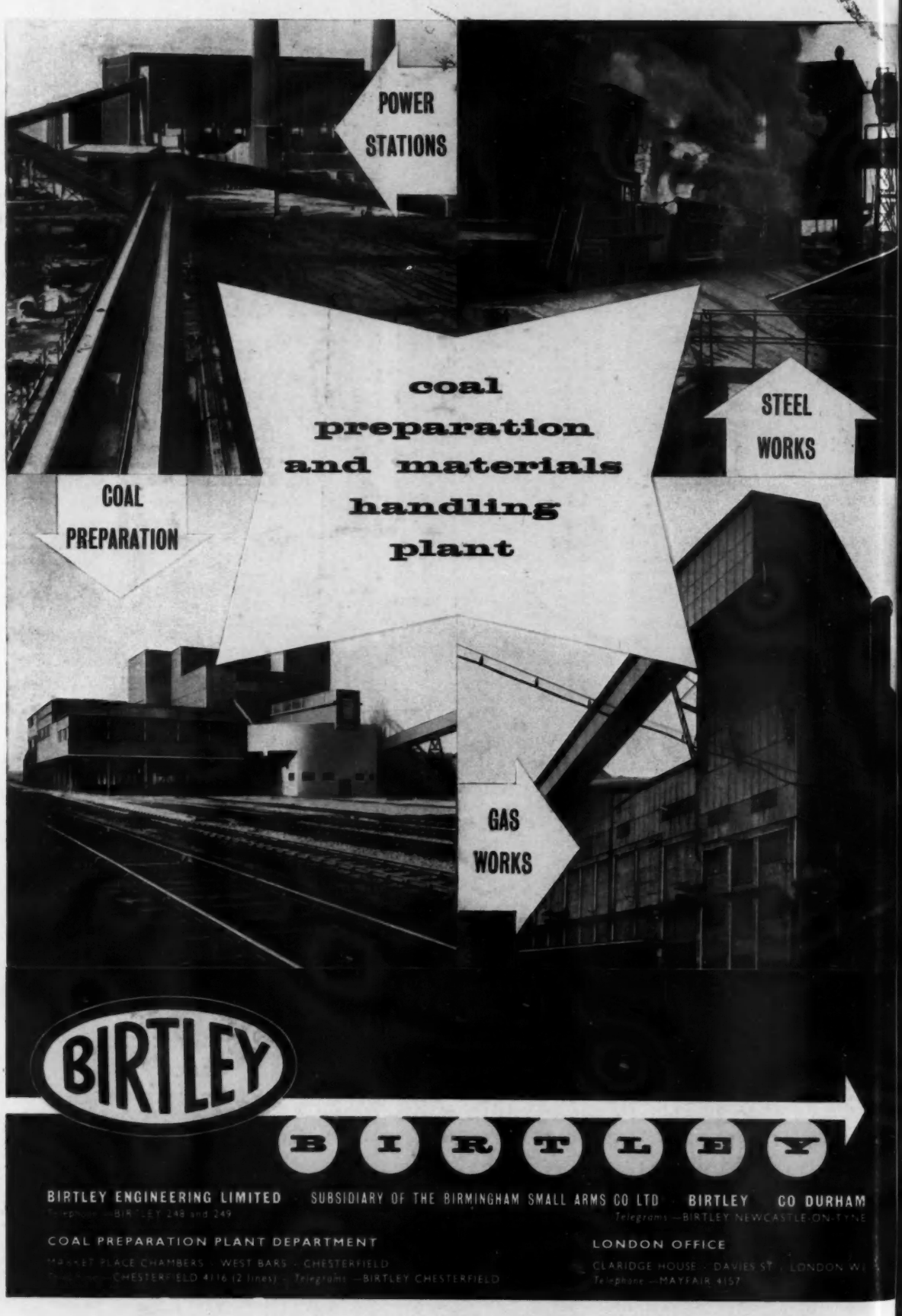
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